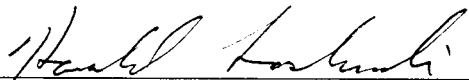


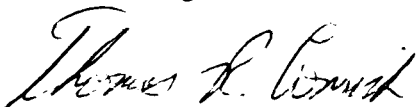
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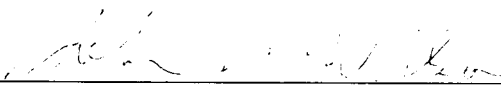
BACK BAY NATIONAL WILDLIFE REFUGE

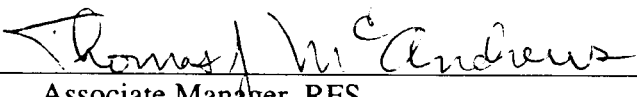
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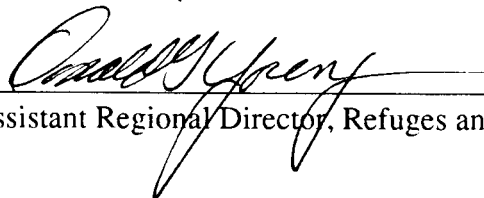
Submitted:  Date: 8/3/93  
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## **PREFACE**

The following plan is the result of a U.S. Fish and Wildlife Service - Region Five initiative to produce general management guidance for individual field stations that is based on management objectives. Through this planning approach:

- 1) the most important refuge issues are described and discussed,
- 2) the current status, proposed actions, and program needs for the next five years are analyzed, and
- 3) refuge objectives and management strategies are developed by consensus of knowledgeable professionals.

This planning method is applied to stations where management issues are relatively clear.

The plan is subject to revision as new information and insights emerge. The plan for Back Bay National Wildlife Refuge has been prepared through the joint efforts of:

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Hadley, MA 01035-9589

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## **PART ONE - BACKGROUND**

### **INTRODUCTION**

During the week of March 4-8, 1991 the U.S. Fish and Wildlife Service (FWS) conducted a five-day planning workshop at Back Bay Refuge to identify management issues and to establish objectives and management strategies for both Back Bay and Plum Tree Island Refuges. Using available information and expertise, a discussion approach was employed to gain a clear understanding of Refuge resources, identify possible management options, and achieve a consensus on how the refuges should be managed over the next three to five years.

The first section of this document is background information on the two Refuges. Plan results are then presented separately for Back Bay and Plum Tree Island. For each Refuge, issues have been listed and analyzed, objectives have been stated (and given high, medium, or low priority) and strategies have been developed for accomplishing objectives. Objectives and strategies are organized according to management subjects such as Wildlife, Public Use, or Fire management. These are then summarized into a General Management Strategy statement that compares current management with management prospects and the resources required to alter or upgrade current management or initiate new programs.

Back Bay National Wildlife Refuge (Refuge) is located entirely within the City of Virginia Beach, Virginia (City). The Refuge was established by Executive Order No. 7907 on June 6, 1938 "...as a refuge and breeding ground for migratory birds and other wildlife." Another of the Refuge's primary purposes (for those lands acquired under the Migratory Bird Conservation Act) is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." In 1939, an additional 4,600 acres of open Bay water within the Refuge boundary were closed to the taking of migratory birds by Presidential Proclamation. Figure 1 shows the general vicinity of the Refuge and the entire Refuge boundary.

The barrier beach portion of the Refuge extends 4.2 miles along the Atlantic shoreline and is bordered on the north by the City's Little Island Recreational Area, and on the south, by False Cape State Park (State Park). The North Carolina line is approximately 10 miles from the northern boundary of the Refuge.

Management objectives have been developed and expanded through the years to provide for a broad spectrum of wildlife, with special emphasis on waterfowl, shorebirds, and threatened and endangered species. The Refuge also provides a program of wildlife-oriented recreation and environmental education for the visiting public that is consistent with Refuge objectives.

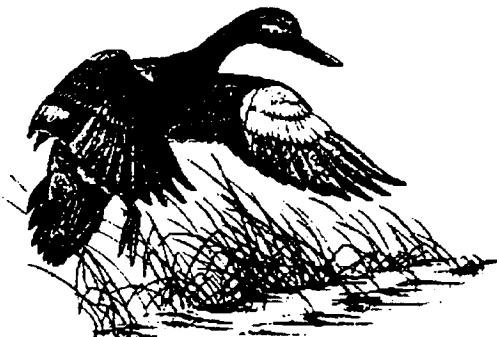


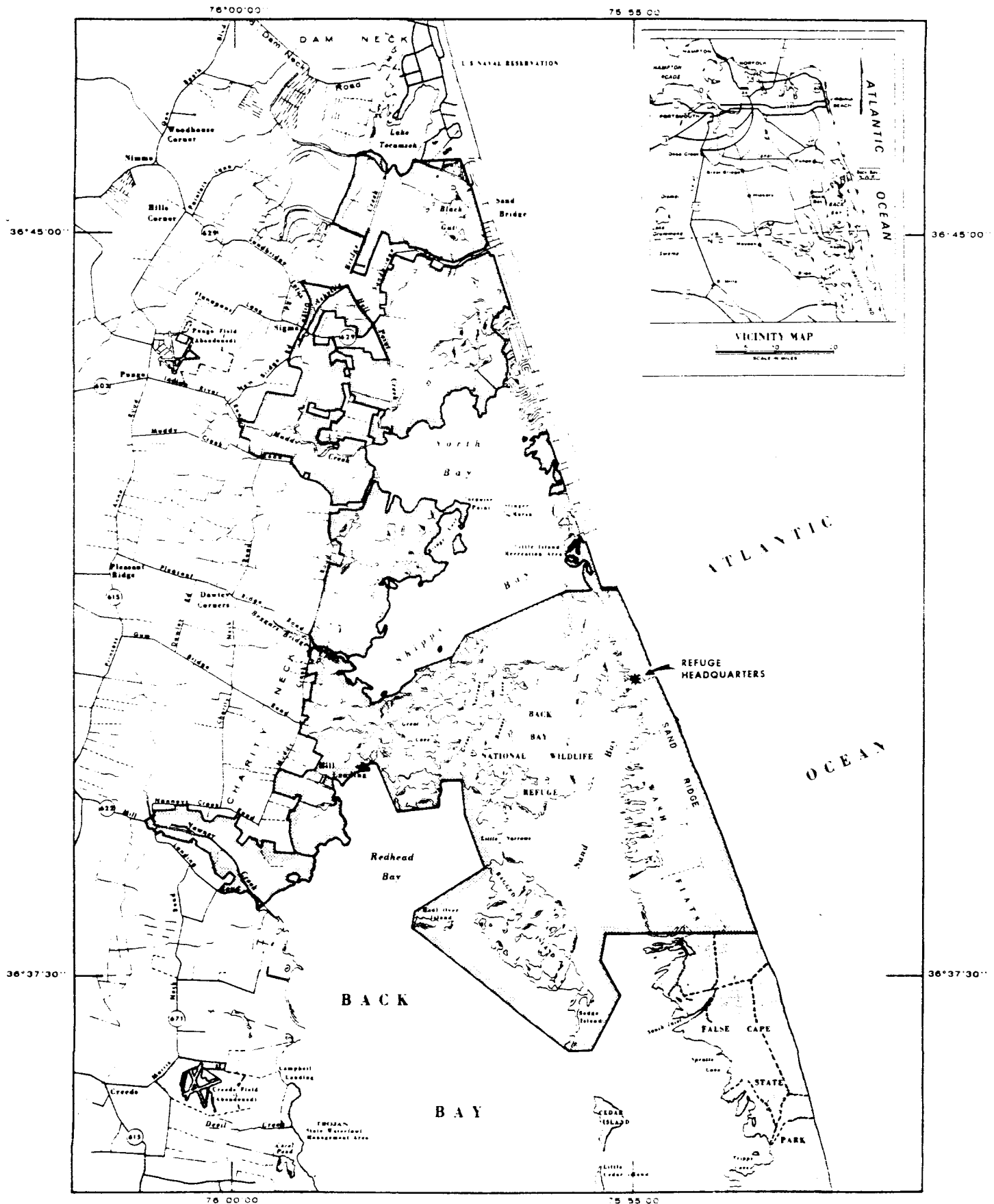
FIGURE 1

# BACK BAY NATIONAL WILDLIFE REFUGE

UNITED STATES  
DEPARTMENT OF THE INTERIOR

CITY OF VIRGINIA BEACH, VIRGINIA

UNITED STATES  
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY  
FROM SURVEYS BY U.S.G.S. AND U.S.F.A.W.S.

NEWTON CORNER, MASSACHUSETTS, APRIL 1984  
REVISED, MARCH 1990

0 4000 8000 12000 16000 FEET  
0 1 2 3 4 KILOMETERS

MEAN DECLINATION  
1980

The following is excerpted from the 1972 Refuge Master Plan:

Before the Back Bay National Wildlife Refuge was acquired by the Federal government, the barrier beach was generally quite flat and sandy. The saline soils were unproductive. Periodically, northeast gales and hurricanes pushed large quantities of sea water across these flat beaches and into Back Bay. During the early 1930's the Civilian Conservation Corps built brush fences and planted cane and bulrush to catch the blowing sand, thus building and stabilizing sand dunes. Later on, sand fences of wood were built, and many of the dunes were planted to beachgrass. These dunes protected the bayside flats and allowed a marsh to be established.

Historically, the Back Bay area has been known for its concentrations of wintering waterfowl and shore birds, along with numerous furbearers, especially muskrats. Although cattle were grazed on the barren beaches and on the very narrow strip of marsh adjacent to the bay, hunting and fishing were the principal land uses prior to the establishment of the refuge. Hunting clubs were numerous, and the Ragged Island Club and the Princess Anne Club comprised the land that is now the refuge.

Since Refuge establishment, management activities have been geared towards providing habitat for migratory birds - specifically waterfowl. Early management focused on development of freshwater marshes on the barrier spit, to compliment the brackish marsh and Submerged Aquatic Vegetation (SAV) in Back Bay. The main techniques for freshwater marsh development included construction of "ring dikes" in the 1950's and, later, the construction of the East, West and cross-dikes. Through these construction activities, approximately 650 acres of primarily unvegetated wash flats were converted to freshwater impoundments by 1970. These areas were then managed for snow geese and other waterfowl, primarily through agricultural practices such as: plowing, discing, seeding and burning. Water level manipulation was also used to enhance the attractiveness of the area to waterfowl.

With the increase in personal leisure time in the years following World War II, public use of the Refuge began to increase. The primary focus of this use was the Refuge beach and dunes. Visitors in four-wheel-drive vehicles came in ever-increasing numbers, resulting in an estimated 348,000 visits by 1971. The Service recognized the damage caused by off-road-vehicle activity and, on February 28, 1973, published the first of many annual rulemakings which limited beach and vehicular use. These proposed limits resulted in major controversy and a lawsuit against the Service. The overall effects on Refuge management activities were: 1) significant expenditures of staff time and dollars on controlling public use, and 2) a de-emphasis of traditional wildlife management activities. In fact, by the mid-1970's over 50% of the annual Refuge staff effort was expended in controlling access and administration of the Motor Vehicle Access Permit Program (MVAPP).

These efforts gradually began to pay off and, by the mid-1980's, as the vehicle access situation was brought under control, the Refuge staff began to emphasize more traditional Refuge management activities. As the 1990's begin, only an estimated 15% of Refuge staff effort is directed toward the necessary administration of the MVAPP. Rules and Regulations governing Public Access, Use, and Recreation on the Refuge, as published in the Federal Register on September 23, 1987, are attached (Appendix 3). The "Background" section of the Regulations provides an excellent overview of the history of the MVAPP; the special regulations currently in effect are included under 50 CFR Part 26.

## ENVIRONMENT

### A. Physical Resources

#### 1. Climate

The climate of Virginia Beach is modified continental with mild winters and hot, humid summers. The average temperature in winter is 42 degrees F and the average daily minimum temperature is 33 degrees F. In summer, the average temperature is 77 degrees F, and the average daily maximum temperature is 85 degrees F. Annual precipitation averages 45 inches. Of this total, 25 inches, or 56 percent, usually falls in April through September. The growing season is 237 frost-free days, the longest growing season in Virginia. The average seasonal snowfall is 7.2 inches. The average relative humidity in mid-afternoon is approximately 58 percent. Humidity is higher at night, and the average at dawn is about 78 percent.

The prevailing wind is from the southwest. Average windspeed is highest in March at 10.6 miles per hour. The area is frequently subject to storms out of the northeast during fall, winter, and spring. These storms can produce localized flooding and severe thunderstorms whose strong winds and heavy rains sometimes result in localized flooding. Although Virginia Beach is north of the track usually followed by hurricanes and tropical storms, the City has been struck infrequently by hurricanes.

#### 2. Air and Noise Quality

The air quality for the City of Virginia Beach is rated high. Due to the location of Oceana Naval Air Station, noise levels can be excessively high in certain sections of the city.

#### 3. Geology

Following is a geologic description of the city of Virginia Beach and Back Bay area as described by Mann (1984):

Virginia Beach lies within the Atlantic Coastal Plain Physiographic Province. The physiography of the area is typical of that of most of the Atlantic seaboard and consists of gently sloping terrace plains extending seaward from the base of the Appalachian Mountains.

The entire wedge of coastal plain sediments is composed of stream-carried sands and clays deposited along a shoreline and nearshore environment not dissimilar to that which presently exists in the area. These include beach and dune environments, salt marshes, stream channels, and flood deposits. The source of the sands and clays was primarily the down wasting of the eastern seaboard continental land mass. Six stratigraphic units compose the 4,000 feet of unconsolidated sediments of the Coastal Plain in the Virginia Beach and Back Bay region. The uppermost unit, the Columbia Group, is characterized by light colored clays, silts, and sands of recent and Pleistocene Age (2.5 mybp to present). These deposits range between 20 and 50 feet thick and include recent dune, beach, and river sediments.



#### **4. Topography and Soils**

The flatness of the lands surrounding Back Bay is the central topographic characteristic of the watershed. Pungo Ridge, along which Princess Anne Road runs, has the highest land elevations on the west side of the Bay, reaching 15 to 20 feet above mean sea level (msl) at several points. On the eastern boundary of the Bay, the sand dunes of False Cape present a second line of higher elevation, reaching 50 feet msl or greater at a number of locations, and 64 feet at the highest.

In between these parallel ridges on the Pungo side lie the better drained uplands, falling away from the highest elevations to an imaginary line that is generally about five feet msl. This lower elevation is the upper edge of the flood plain. This is where the principal marshes and swamps of the Bay's edges are found; however, throughout the flood plain at its higher elevations and where the soils are inclined to dry out more readily, crops are farmed. Because of the universal flatness and low elevation of the land, flooding from high wind tides is a frequent problem for the farmers, particularly below the three - or four-foot contour levels.

The Soil Conservation Service has mapped the soils within the City of Virginia Beach. The major associations which are found within the Refuge include Acredale-Tomotley-Nimmo, Back Bay-Nawney, and Newhan-Duckston-Corolla.

#### **5. Surface Water Resources and Quality**

Greater Back Bay is divided by its natural configuration of islands into five sub-Bays: North Bay, Shipp's Bay, Redhead Bay, Sand Bay, and Back Bay proper. Numerous channels, narrows, and guts link the sub-Bays together as does cross-wetland drainage. The whole of Back Bay has a surface area of about 39 square miles. The surrounding uplands and wetlands cover an additional 64 square miles accounting for approximately 104 square miles of watershed land and water resources. The 65 square miles of land which drain into the Bay control to a large degree the quality of water in the Bay. Major drainage creeks that feed into the Bay from the surrounding watershed include Hell Point Creek and Muddy Creek at the northwest corner of North Bay, Beggars Bridge Creek at Shipp's Bay, Nanney's Creek between Redhead Bay and Back Bay proper, and Devil Creek, the smallest of the creeks near the center of Back Bay proper. Surrounding lands are also drained by numerous drainage ditches that feed into the creek or directly into the Bay.

Most of the Bay is quite shallow with an average depth of less than five feet. The Bay includes fresh to sometimes brackish water. It has one major outlet to the south into Currituck Sound. Water level fluctuations are caused primarily by the wind. Summer winds generally blow from the southwest, while in the winter, winds are more northeasterly. Strong southerly winds of several days duration can force water from Currituck Sound into Back Bay. Wind setups of three to four feet have been estimated in the northern part of the Bay. Strong northerly or northeasterly winds, over several days, result in the dewatering of northern and eastern coves in the Bay.





Back Bay supported a more saline environment when it was previously influenced by lunar tides. However, in 1850, when Currituck Inlet was closed by natural processes, this lunar influence was greatly diminished. Without the regular influence of ocean water, fresh water influence has predominated to create a fresh-brackish system. Only occasional storm overwash has brought in masses of salt water.

The brackish Bay waters were also formerly influenced by a salt water pumping station located one-half mile north of the Refuge boundary. The station was operated by the City of Virginia Beach for the purpose of pumping ocean waters into the Bay. Salinity near the pumping station formerly averaged 10 to 15 percent of sea water.

Historically, throughout North Bay and Shipps Bay, average salinity varied between nine and ten percent of sea water, while in Redhead Bay and Back Bay it ranged from 5.5 to 6.5 percent of sea water. Salinities of seven to eight percent of sea water formerly occurred in waters in the channels connecting Shipps Bay with Redhead and Back Bays (Howard, et al. 1976).

Major storms such as the Ash Wednesday Storm of 1962 can cause salinities to rise as high as 75% that of sea water. Salinities this high may have lethal effects on fish and aquatic plants that live in Back Bay. This will become more important as salinities decrease over the recent past and more freshwater-tolerant plants become established in Back Bay.

The salt water theory has been considered a solution to the problems of turbidity in Back Bay. Several studies have seriously questioned this hypothesis. Mann (1984) stated:

“Water clarity is determined by water color (clear, brown), suspended soil particles, and phytoplankton growth. Back Bay water quality has been an area of concern for many years. The lack of vegetation in the Bay is often attributed to the lack of water clarity. The decision to introduce salt water to the Bay in 1964 was predicated on anticipated improvements in water clarity which in turn would result in increased growth of vascular vegetation”.

“Considerable statistical analysis conducted on the salinity and turbidity data revealed no correlation between the two parameters. Even during August, 1983, when salinity in North Bay was the highest it has ever been, no correlation was found. The lack of correlation is not surprising since a large change in turbidity can be observed as daily wind and wave conditions in the Bay change. Additionally, when clarity was greatest from 1975 through 1978, the salt water pump was inoperative for a large portion of the time and average Bay salinity ranged from 1.3% SS to 7.4% SS”.

Turbidity fluctuations go a long way in explaining the aquatic vegetation changes that have occurred in Back Bay. Until the introduction of Eurasian milfoil in 1964, increased turbidity levels (possibly from increased runoff due to intensified agricultural practices) caused the native SAV's to gradually die off. The spread of the milfoil probably lowered the turbidity levels in certain areas, thus allowing the re-establishment of other SAV's that were noticed in the 1970's. At the present time, land development in Virginia Beach continues to expand and turbidity has increased to the point where, during the past several years, even the Eurasian milfoil beds have nearly disappeared.

The water quality in Back Bay has begun to deteriorate from a number of additional factors as well. Quality has been, at times, fair to poor at the mouths of the tributaries and within several of the watershed creeks that have been subject to urban and/or agricultural runoff. Pollutant laden urban runoff, which is channeled into Back Bay from the surrounding watershed, adversely affects the water quality of North Bay and its tributaries. Future impacts of an urbanized watershed could be severe and irreversible. Agricultural impacts may include: excessively high concentrations of nitrogen and phosphorous in Back Bay and its tributaries from fertilizer applications, releases of liquid waste from hog waste holding lagoons, pesticides, and sediments from erodible fields which enter the Bay and creeks from the extensive drainage ditching system.

Water quality in the Bay may also be impacted by the large number of septic systems that are located on the area. Some of these systems are built in poorly drained soils and may either fail to function properly or fail completely. Golf courses may also contribute to water quality problems.

## **6. Groundwater Resources and Quality**

Mann (1984) identifies two primary freshwater aquifers in the Back Bay watershed that consist of the confined aquifer within the Yorktown formation and the shallower, unconfined aquifer within the overlying Columbia deposits. Municipal wells are generally within the confined aquifer, while many domestic wells are within the unconfined aquifer.

All major groundwater quality criteria, with minor exceptions, have been found to be within applicable concentration standards. Salt water intrusion has been found in deeper groundwater supplies. A small increase in overall nitrate concentrations in groundwater is evident and suggests the impact of agricultural activities. However, for the most part, nitrate concentrations in the shallow regional aquifer are low in comparison with other agricultural areas. In general, groundwater quality in the Back Bay watershed is good.

## **B. Biological Resources**

### **1. Vegetation and Habitat**

As of May, 1993 the Refuge consisted of about 7,700 acres within an approved acquisition boundary of nearly 11,000 acres, not including proclamation waters. The original 1938 purchase consists of 4,589 acres of beach, dunes, woodland, and marsh. In 1990-91, the first lands acquired since 1938 were purchased with funds from the Migratory Bird Conservation Account. This initial purchase within the expanded boundary added 539 acres of marsh, scrub/shrub swamp, farm fields, and woodlands to the Refuge north and west of Back Bay.

The Refuge oceanfront and beach is one of the most dynamic along the Atlantic coast. The slope of the beach may change radically within one tide cycle. The beach varies in width from 100 to 250 feet at low tide and, including the dunes which reach an elevation of up to 30 feet, comprises approximately 800 acres of Refuge habitat. Marshland comprises about 3,850 acres or 77 percent of the barrier spit portion of the Refuge. This wetland acreage includes approximately 1000 acres in ten impoundments on the barrier spit. Scattered woodland, consisting primarily of loblolly pine

in ten impoundments on the barrier spit. Scattered woodland, consisting primarily of loblolly pine with some live oak, red maple, persimmon, and sweetgum, totals about 200 acres. The tracts acquired since 1990 include agricultural land, wooded and scrub/shrub swamp, and marshland. Refuge upland areas include about 55 acres of wheat and hay (Long Island) managed as goose browse.

Historic records show that the barrier beach system was severely overgrazed in the 19th century resulting in the mobilization of large sand sheets and moving dunes. The cutting and burning of forested areas probably preceded the overgrazing. Forested areas have been culled many times in the past, undoubtedly changing the vegetative composition of the area.

Natural processes have also served to further shape the vegetative distribution and diversity on the barrier. Site-specific factors such as depth to water table, amount of salt spray, substrate stability, water salinity, and the effects of periodic flooding have significantly contributed to the vegetative pattern which now exists.

The vegetative communities of the refuge are divided into the following groups:

### **Beach/Dune Grasslands**

In general, the only plants found between the Ocean and the dunes are located between the wrack line and the toe of the dune. The wrack line is a zone of vegetative debris at the high tide swash line and provides a substrate for vegetation establishment. Pioneer species found in this zone are sea rocket (*Cakile edentula*) and American beach grass (*Ammonophila breviligulata*). The relatively high, continuous dune line that is characteristic of the northern Outer Banks is colonized by a number of grasses, primarily American beach grass and sea oats (*Uniola paniculata*). The natural ranges of these two grasses overlap along this portion of the coast. Sea oats, which grow in less dense stands, reach their northern limits on the Virginia barrier islands, while American beach grass reaches its southern limits on the Outer Banks of North Carolina. The southern limit of beach grass has been artificially extended by plantings that are part of dune building and stabilization research.

Both grasses develop extensive horizontal rhizomes with rootlets that capture moisture from rainfall. These rhizomes further serve to bind sand and stabilize sand surfaces. Beach grass and sea oats are adapted to tolerate stresses such as salt spray, overwash, sand blast, and drought, all of which are characteristic of the foredune area. However, both species are extremely vulnerable to mechanical disturbance of the soils.

In stabilized areas of the dunes, conditions are more favorable, and the following species are noted: sea rocket, evening primrose (*Oenothera humifusa*), seaside goldenrod (*Solidago sempervirens*), beach pea (*Strophostyles helvola*), sandspurs (*Cenchrus tribuloides*), daisy fleabane (*Erigeron canadensis*), and spurge (*Euphorbia polygonifolia*).

Stabilized and protected interdunal depressions develop a high diversity of plant species. At the Refuge and the adjacent False Cape State Park, 129 species of plants have been identified. Distribution, abundance, and succession of these species are controlled by several abiotic and biotic factors including soil moisture, interspecific competition, salt spray, migratory waterfowl activity, and feral hog and trespass horse disturbance (Tyndall 1977).



Dominant species in these depressions include salt meadow cordgrass (*Spartina patens*), needlerushes (*Juncus* spp.), three-square bulrush (*Scirpus americanus*), and broom sedge (*Andropogon virginicus*). Common herbaceous species include water pennywort (*Centella asiatica*) and purslane (*Ludwigia palustris*).

Woody vegetation on the perimeter of these depressions includes groundsel-tree (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), bayberry (*Myrica pensylvanica*), black cherry (*Prunus serotina*), and live oak (*Quercus virginiana*).

Availability of fresh water, diversity of seed producing and other food plants, as well as vegetative cover, provide habitat for many species of wildlife in these areas.

### **Barrier Spit Woodlands and Shrublands**

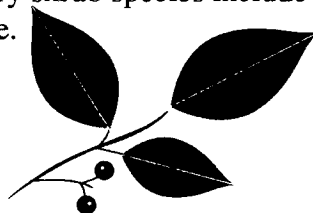
A shrub thicket occurs throughout the length of the Refuge where sites are naturally or artificially protected from oceanic influence. The buffering action provided by the fore and mid-dunes is essential for the establishment of this arborescent zone. When salt spray effects are the greatest, these species form low, spreading cover with areas of maritime grassland in between. Away from the ocean in shrub dominated areas, the growth pattern is taller and denser, forming a closed canopy.

The dominant shrubs of the shrub thicket community are: blueberry (*Vaccinium* sp.), American holly (*Ilex opaca*), yaupon (*Ilex vomitoria*), hudsonia (*Hudsonia tomentosa*), wax myrtle, red cedar (*Juniperus virginiana*), live oak, and groundsel-tree. Woody vines are also found in this community including greenbrier (*Smilax bonanox*), Virginia creeper (*Parthenocissus quinquefolia*), grape (*Vitis* spp.), and poison ivy (*Rhus radicans*). The understory of the shrub thicket community is sparse and consists mostly of seedlings of the above mentioned shrubs and vines.

Cleared edges, roadways, and rights-of-way have been invaded by shrub thicket stands. This has created large areas of “edge space”, and ecotonal habitat that many species of wildlife in habit.

Shrub thickets merge gradually into forestland. The barrier beach portion of the Refuge has only a small portion of forest in the “Green Hills” area, adjacent to Barbour’s Hill. The forest on False Cape State Park is located along the back dunes of the barrier system in areas not directly affected by ocean storms.

Forests located close to the ocean are low, generally reaching heights of less than 20 feet, and they exhibit dense lateral branching. This lack of apical dominance is caused by wind and salt spray. Dominant species include live oak, loblolly pine (*Pinus taeda*), red cedar, and laurel oak (*Quercus laurifolia*). Understory shrub species include American holly, black cherry, poison ivy, Virginia creeper, and grape.



## **Marshes**

Slightly brackish marshes cover essentially all of the low-lying Bay shoreline areas of the barrier beach, most of the islands within the Bay, and the lower areas in the northerly and westerly portions of the Refuge.

The impoundments and marsh flats on the spit are dominated by plants such as cattail (*Typha* spp.), black needlerush (*Juncus roemerianus*), water hussop (*Bacopa* spp.), spike rushes (*Eleocharis* spp.), salt meadow cordgrass, beggar tick (*Bidens* spp.), and three-square. A fragment of forest exists on the higher sand mounds in the marsh flats and impoundments. Dominant plant species include wax myrtle, live oak, red maple (*Acer rubrum*), loblolly pine, and greenbrier.

Most of the marshes of Back Bay are dominated by black needlerush. Common associates include cattails, arrowhead (*Sagittaria* spp.), seashore mallow (*Kosteletzkya virginica*), smart weeds (*Polygonum* spp.), marsh fern (*Dryopteris thelypteris*), and various grasses and sedges. Considerable variation occurs in the composition and diversity of these marsh communities, depending upon such factors as successional stage, degree of disturbance, salinity, water table level, and local drainage pattern. In many places, marshes are composed of nearly pure stands of black needlerush. In areas that receive freshwater runoff, cattails are dominant. Big cordgrass (*Spartina cynosuroides*) often covers the outer fringes of marshes adjacent to open water. Younger successional stages and more open areas are often dominated by three-square bulrush, saltmarsh bulrush (*Scirpus robustus*), softstem bulrush (*S. validus*), smartweeds and panic grasses (*Panicum* spp.). These areas provide excellent waterfowl food, but are apparently replaced in later successional stages by cattails or black needlerush. Areas which have been disturbed often come back in wild millet (*Echinochloa crusgalli*), reed grass (*Phragmites communis*), panic grasses, and three-square. Species of rooted aquatic plants in Back Bay include Eurasian water milfoil (*Myriophyllum spicatum*), sago pondweed (*Potamogeton pectinatus*), and najas (*Najas quadalupensis*).

## **Forested Swamps**

Brackish marshes gradually grade into forested swamp habitats. Swamps occur primarily adjacent to riverine systems including Nanney's Creek, Beggars Bridge Creek, Muddy Creek, and Hell Point Creek. Dominant overstory species include red maple, bald cypress (*Taxodium distichum*), sweet gum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), and black willow (*Salix nigra*). Understory species typically consist of false nettle (*Boehmeria cylindrica*), royal fern (*Osmunda regalis*), greenbrier, poison ivy, and immature canopy species.

## **Lowland Forests and Agricultural Fields**

Brackish marshes and forested swamp habitats gradually grade into low-lying, poorly drained agricultural fields and forests. These habitats are primarily below five feet msl. Primary agricultural crops consist of soybeans, corn, and wheat. Secondary crops include a variety of vegetables. Lowland forests primarily occur as small isolated stands, many of which are surrounded by agricultural lands. These forest stands are typically unsuitable for agricul-

ture. Overstory species typically consist of loblolly pine, sweet gum, laurel oak, white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), southern magnolia (*Magnolia grandiflora*), black cherry, and hickory (*Carya spp.*). Understory species include flowering dog wood (*Cornus florida*), wax myrtle, greenbrier, Virginia creeper, highbush blueberry (*Vaccinium corymbosum*), poison ivy, and immature canopy species.

## 2. Wildlife

Although the Back Bay area is noted for its formerly large wintering waterfowl populations and its once significant sport fishery, it does exhibit a diversity of other wildlife.

Following is a general discussion of the wildlife of the Refuge:

### Waterfowl

Back Bay and the associated marshes and swamps provide important resting and migration habitat for a diverse waterfowl population. Species include Canada geese (*Branta canadensis*), greater snow geese (*Chen caerulescens*), tundra swans (*Cygnus columbianus*), and 17 species of ducks. Waterfowl generally begin arriving on Back Bay in late August through September. Diversity peaks in October with over a dozen species typically being present at any one time. Peak populations generally occur in November and December and waterfowl disperse in February and March.

Notable dabbling duck species include Northern pintail (*Anas acuta*), mallards (*A. platyrhynchos*), black ducks (*A. rubripes*), gadwall (*A. strepera*), and wood ducks (*Aix sponsa*). Mallards, black ducks, wood ducks, gadwall, and Canada geese also breed on the Refuge in limited numbers. Diving duck species observed using the Bay have decreased drastically in both diversity and abundance. The vast rafts of canvasbacks (*Aythya valisineria*) recorded in the Bay as late as the mid-1970's no longer occur. However, small numbers of bufflehead (*Bucephala albeola*), common goldeneye (*B. clangula*), ruddy ducks (*Oxyura jamaicensis*), lesser scaup (*Aythya affinis*), redheads (*A. americana*), ring-necked ducks (*A. collaris*), common merganser (*Mergus merganser*), and hooded merganser (*Lophodytes cucullatus*) still winter on the Bay.

Table 1 lists peak waterfowl populations on the Refuge between 1986 and 1992.

<b><u>Table 1. Peak Waterfowl Populations for Back Bay NWR 1986 -1992</u></b>			
<b><u>Year</u></b>	<b><u>Geese</u> (Snow and Canada)</b>	<b><u>Ducks</u></b>	<b><u>Tundra Swans</u></b>
1986	8,600	2,249	512
1987	12,750	4,262	500
1988	25,104	2,099	354
1989	7,703	1,855	554
1990	8,383	2,171	211
1991	12,500	3,905	225
1992	9,300	6,150	325

### **Additional Migratory Birds**

Since establishment in 1938, some 259 bird species have been observed on the Refuge. Most of the species are migratory and, therefore, may be present only a portion of the year. Besides the waterfowl mentioned previously, these birds include a variety of shorebirds, marsh and wading birds, water birds, raptors, and passerine birds. Notable species include: great egret (Casmerodius albus), snowy egret (Egretta thula), great blue heron (Ardea herodias), marsh hawk (Circus cyaneus), osprey (Pandion haliaetus), peregrine falcon (Falco peregrinus), red-tailed hawk (Buteo jamaicensis), and great horned owl (Bubo virginianus).

### **Mammals**

Besides wintering a diversity of migratory birds, the marshes, swamps, and upland fringe areas of the Refuge provides habitat for many mammals including white-tailed deer (Odocoileus virginianus), raccoon (Procyon lotor), red fox (Vulpes fulva), otter (Lutra canadensis), mink (Mustela vison), muskrat (Ondatra zibethicus), nutria (Myocastor coypus), and marsh rabbit (Sylvilagus palustris).

### **Fishery Resources**

At one time, the freshwater fishery in Back Bay and Currituck sound was called "one of the best in the country," particularly for largemouth bass. Today, however, bass fishing has been severely limited due to the decline of SAV's in the Bay.

Other important species of sport fish in the Bay are, black crappie, chain pickerel, flounder, bluegill, pumpkinseed, and bluespotted sunfish. In the more northern Bays, Atlantic needle fish, silversides, white perch, and pumpkinseed are important sport catches. On the ocean side, surf fishermen catch croakers, spot, striped bass, weakfish, kingfish, bluefish, and flounder.

Commercial fish catches in Back Bay include white perch, catfish, carp, shad, herring, and eels. White perch are taken in gill nets in deep open parts of the Bay. Other species are caught in haul seines and set nets. Croakers, spot, weakfish, and bluefish are taken commercially by haul seine and gill nets from the ocean surf. The best commercial catches are made in the spring and fall. Croakers are caught from mid-April through August, and spot are caught from mid-April through November. Striped bass and bluefish are taken from October through February, while shad are caught from February through April.

### **Invertebrates**

The primary food of fishes in Back Bay are various benthic invertebrates, including numerous kinds of insect larvae and small crustaceans. The most commonly collected invertebrates include the midges (Chironomidae) and scuds (Amphipoda). Other common macrobenthic invertebrates in Back Bay include at least six orders of insects which have aquatic larvae: earthworms (Oligochaeta), snails (Gastropoda), crustaceans (Isopoda and Decapoda), and clams (Pelecypoda).





Back Bay offers a wide variety of habitats to aquatic macrobenthos and fish. The shore zone, with thick deposits of organic detritus, occasional sand flats, patches of emergent, submerged and floating vegetation, and even areas of the open water, provides excellent habitat for a variety of organisms. Within each habitat, different organisms occupy specific levels in the food chain. Some, including the mayflies (Ephemeroptera), function primarily as herbivores and feed on the microscopic plants present. Others, such as the damselfies and dragonflies (Odonata), are predators of other aquatic insects. Still other organisms like the scuds (Amphipoda) are scavengers and utilize the decaying material of the bottom as an energy source. In turn, many of these organisms serve as important food items for fish as well as waterfowl and other waterbirds.

## C. Socioeconomic Resources

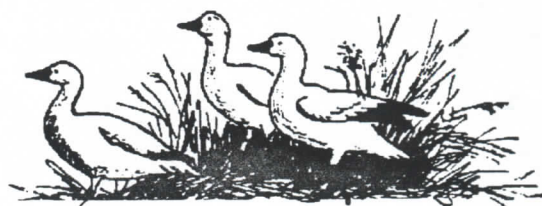
### 1. Land Use

The Refuge area is relatively rural, and with the exception of the Sandbridge community, is developed primarily in agriculture. The area has retained this basically rural, agricultural character for more than 300 years.

The majority of the land within the expanded Refuge boundary exists in a natural state with approximately 60% of the land consisting of brackish marsh and forested swamp. Lowland forests exist on soils that are insufficient to support farming. Remaining lands exist as agricultural fields. Farm houses and associated buildings, residential development, and limited commercial areas are scattered throughout the area.

Lands within and around the Refuge fall within several zoning categories. Zoning south of Sandbridge Road is primarily agriculture and preservation. A strip north of Sandbridge Road is zoned business, while the remainder is zoned for residential uses of varying intensities. In the community of Sandbridge, the zoning is residential. Sandbridge has been developed for high density resort homes over the past two decades. It is the primary densely settled portion adjacent to the Refuge boundary. Much of Sandbridge is separated from Back Bay by a series of finger canals and marsh.

Despite the overall rural, undeveloped character of the area, the fact that it lies in one of the fastest growing metropolitan areas in the nation is a challenge to its rural character and current land use pattern. Development in much of the Refuge acquisition area north and west of Back Bay has been curtailed by establishment of the "Green Line" and short-term overlay zoning laws. However, as City services catch up with development north of this line, and pro-development interests retain control of City government, the potential for large-scale housing development becomes feasible. Demand for housing in the city continues to increase and the trend of the area is towards increased development. In fact, under the present zoning, small subdivisions (one and three acre house lots) have already become established.



## **2. Economy**

The Virginia Beach Planning Department (1982) reports that white collar workers are the largest component of adult heads of household in the city (36%), followed by blue collar (22%), military (18%), other workers (5%), and retired or not employed (19%). The Virginia Employment Commission reports a February 1992, unemployment rate of 6.7%. Workers in the area are largely employed by the military, in retail and wholesale trades and services, in manufacturing, on the docks, in agriculture, and in higher education. The tourism and recreation-related industries make a significant contribution to the economy of Virginia Beach. During 1986, 2.5 million visitors generated over \$431 million in revenue.

The economy of the Refuge area is primarily based on agriculture, with the exception of Sandbridge. Agriculture is one of the major segments of the City's economic base and has been by virtue of its long history and tradition in Virginia Beach. Agricultural activities are concentrated on raising hogs and grain production, principally winter wheat, field corn, and soy beans. More recently, several local farmers have converted to farming organically grown fruits and vegetables for private and commercial use.

Sandbridge is a residential/recreational community of about 1240 homes. During the summer months, over one-half of the dwelling units are occupied by non-resident property owners or short-term tenants. Income is derived in Sandbridge from rental of recreational properties or from sale of goods and services. Business activity in this area is currently expanding.

## **3. Social**

The City of Virginia Beach is one of the fastest growing coastal cities of the United States. Because of the high quality and diversity of its environmental resources, the City has long attracted residents and businesses. Its proximity to the naval and maritime facilities of Portsmouth, Norfolk, and Newport News, and specifically as the location of the Oceana Naval Air Station, Camp Pendleton State Military Reservation, Little Creek Naval Amphibious Base, Fort Story Army Post, and other military installations have made it an attractive location for military and civilian personnel and their families.

The City has undergone a period of phenomenal growth since incorporation in 1962. From 1960 to 1980, the population for all of Virginia Beach nearly tripled from 85,218 to 262,199. The 1990 Census counted a population of 393,069, a ten-year increase of 50%. Despite the phenomenal growth of the City's population from 1960 to 1990, the population of the area surrounding the Refuge has experienced only modest growth during the same time period. With the exception of Sandbridge, the area supports a primarily rural population. However, the semi-rural atmosphere is attracting residents. In addition, once growth becomes saturated in the northern portion of the City, the Refuge area will absorb a greater percentage of the City's overall growth.

The City's population is relatively young with school-aged children (ages 5-19 years) comprising 23% of the population; 63% is represented by the 20-64 age group, and that segment of the population over 65 comprises 6%. Educational levels are high in Virginia Beach with 87% of

#### **4. Historical and Archaeological Resources**

While few systematic archaeological surveys have been performed in the vicinity of Back Bay Refuge, a number of prehistoric archaeological sites exist within the present Refuge bounds, and the probability of further sites within unacquired Refuge tracts is very high, particularly on terrace edges bordering the wetlands.

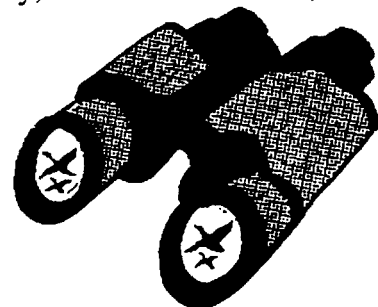
Documented historic settlement of the Ashville Bridge Creek and Nanny's Creek area dates from the second half of the 17th century onward, with several plantations occupying the mainland uplands along the edge of the Refuge boundary. In the early 18th century, at least some of these had landings at the present wetland edge, and subsidiary plantations on islands within the present Back Bay Refuge. The probability for presence of standing buildings from these plantations or archaeological remains of vanished plantations is high within this area. The Refuge does not have any historical or archeological sites listed on the National Register of Historic Places or the Virginia landmarks Register; however, National listing is pending on a 19th century farmhouse acquired by the Refuge in 1990.

#### **5. Recreation**

Because of its scenic ocean beaches, marshes and Bays, and accessible recreational opportunities, the City of Virginia Beach has become a major summer tourist haven. The beaches are the primary attraction for these tourists; however, the Back Bay area provides excellent opportunities for wildlife-oriented recreational activities.

Historically, the Back Bay region is well known for its waterfowl hunting and its fishery resources. According to the Virginia Outdoors Plan (1984), fishing is among the twelve most popular activities within the Hampton Roads region, and there is an ample resource to support many times the anticipated resident demand. However, in some cases, public access is limited. Additional boat launch ramps are needed in most of the localities. White perch, bluegills, largemouth bass, and black crappie are the most popular fish species in the Bay. Surf fishing is also a popular activity on the ocean side.

Hunting programs currently exist on the Refuge, False Cape State Park, and the nearby Pocahontas and Trojan Wildlife Management Areas. The Virginia Department of Game and Inland Fisheries provides public hunting programs for waterfowl, as well as limited deer hunting. The Refuge conducts an annual deer hunt and has a trapping program. The Refuge provides excellent opportunities for birding during the spring and fall migrations and throughout the winter. Additional activities include photography, wildlife observation, and hiking.



## ADMINISTRATION

Refuge activities are administered from the headquarters building located on the barrier spit, approximately one mile south of the north boundary. This building also doubles as a Visitor Contact Station. The maintenance compound is located three quarters of a mile south of the headquarters building. A current staffing chart and five-year funding history are shown in figure 2 and table 2, respectively. The average annual budget between FY 88 and FY 92 equaled \$628,392.

Back Bay NWR is also the administrative headquarters for the 3,275-acre Plum Tree Island NWR, located in the City of Poquoson, Virginia. Primarily salt marsh, Plum Tree Island is actually a peninsula bordered by the Poquoson and Back rivers, and Chesapeake Bay. It was formerly used by the Department of Defense as a bombing and gunnery range and was transferred to the Service in 1972. Due to the presence of unexploded ordnance, Plum Tree is closed to all public use.

Because Back Bay staff are responsible for protecting and managing Plum Tree Island, and Refuge funds and manpower are expended each year in this effort, administration of Plum Tree Island must be considered when planning Refuge objectives. Plum Tree Island has its own set of situations, (physical, biological, and political) that will require a separate and distinct planning effort in the future. However, because management of Plum Tree Island does require staff involvement and funding, it is discussed in Part Two.

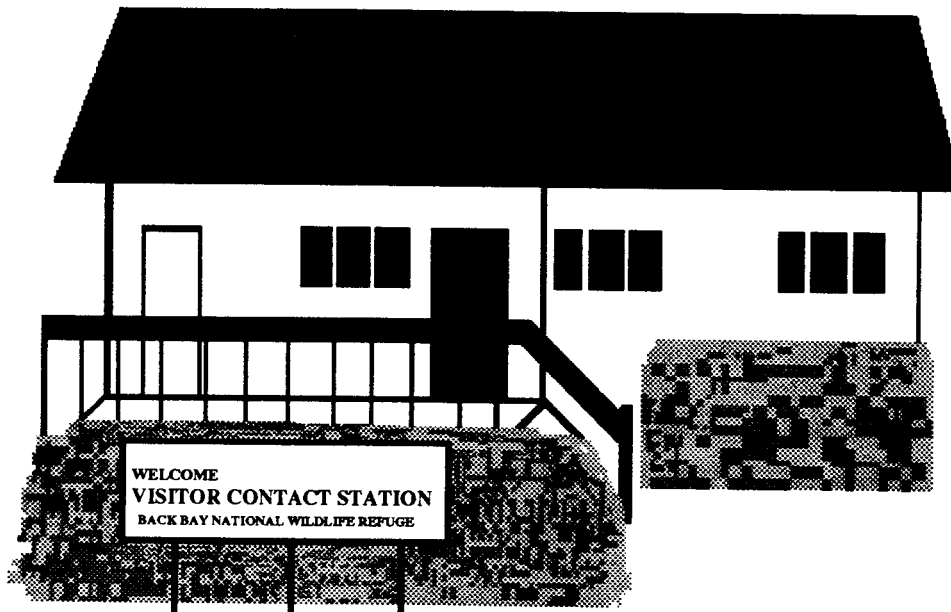
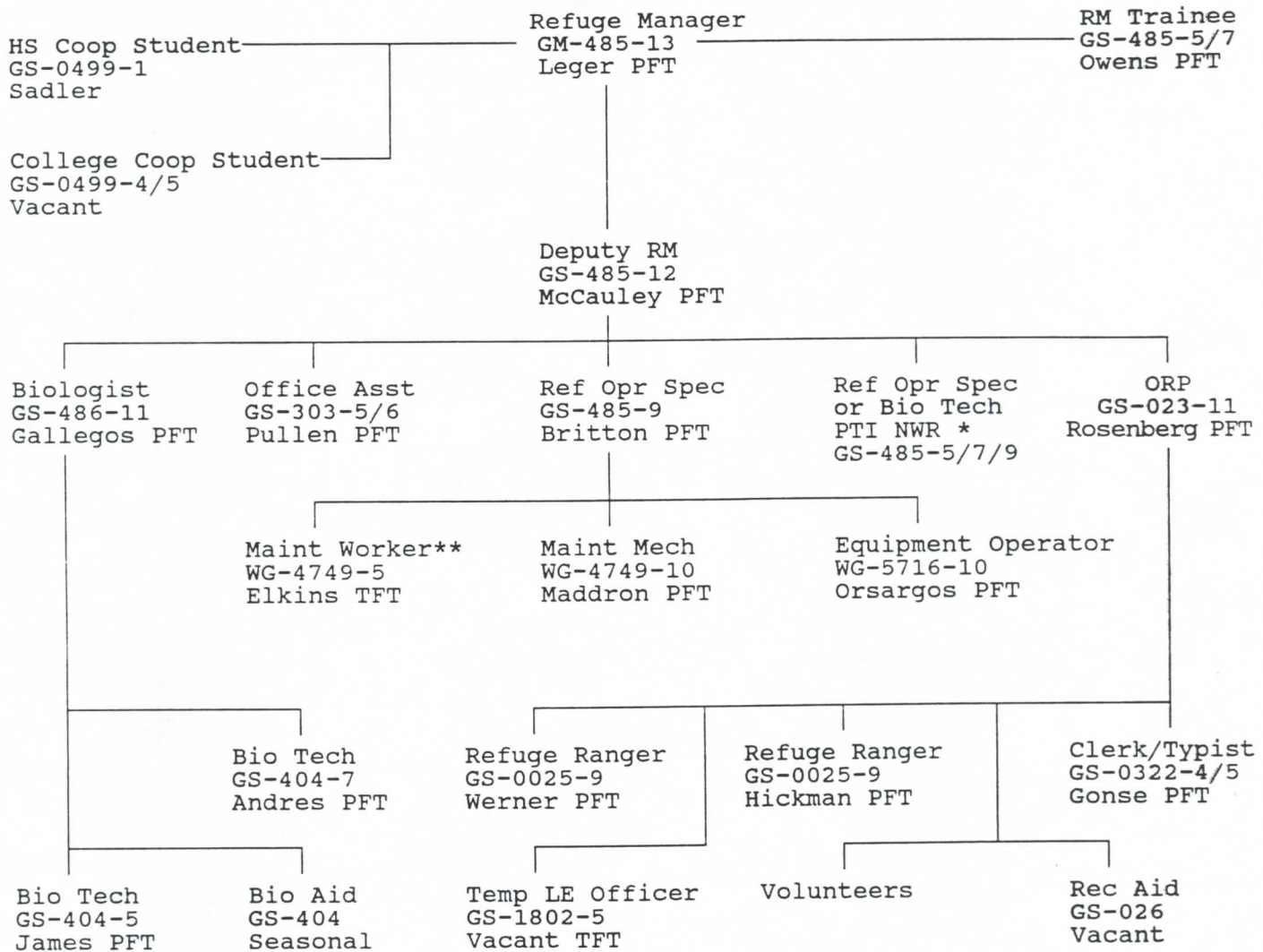




FIGURE 2

## BACK BAY NWR STAFFING CHART



\* Identified as a future need

\*\* Currently filled as a temporary appointment

Submitted By: Anthony D. Leger Date: June 15, 1992

Reviewed By: Thomas A. McCauley Date: 18 JUN 92

Approved By: [Signature] Date: 6-19-92

TABLE 2

FIVE YEAR FUNDING SUMMARY

FUND SOURCE	FY89	FY90	FY91	FY92	FY93
1260 (Minimum/Basic Levels)	337,732	393,994	435,689	486,340	586,832
1260 (Resource Problems)	10,000	16,600	--	--	--
1260 (ARMM)	30,000	136,712	--	--	--
1260 (Base O&M)	--	--	--	36,451	3,300
1260 (Pub. Use - WW,VOL,WE,SIGNS)	--	--	--	17,074	4,000
6860 (Expenses for Sales)	3,000	3,000*	3,000*	3,000*	3,000*
9120 (Fire)	--	5,200	16,500	1,375	500
4960 (Fee Receipts)	--	16,636	7,092	--	17,000
1971 (Contributed Funds)	--	82,500	70,194	29,000	4,000
(Challenge Grants)	--	--	96,400	28,000	--
MMS/Base Maintenance	--	--	177,500**	93,955	122,000
8421 (Realty Funds)	--	--	2,400	--	--
7201 (Donated Funds)	--	--	1,912	--	--
TOTALS	\$380,732	\$646,942	\$807,687	\$692,195	\$740,638

\* Included in minimum level project (non-additive).

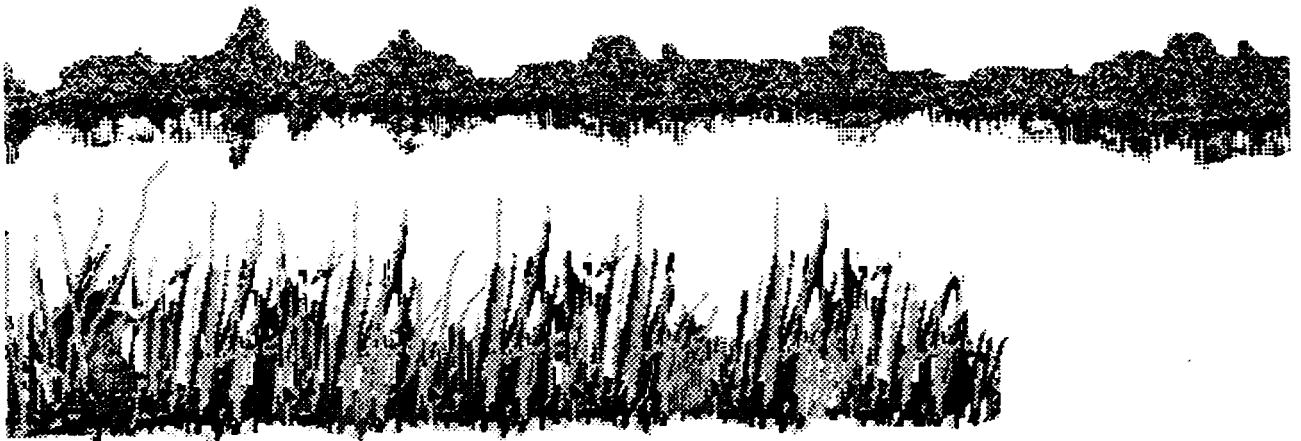
\*\* Includes \$12,000 for vehicle replacement, end-of-year purchase, RO funds

## LAND STATUS

Figures 3, 3a, and 3b show the expanded Refuge boundary with 1990-93 acquisitions highlighted and inholdings numbered. The Refuge's land acquisition program is only in its fourth year; since FY 90 \$6.4 million has been appropriated from the Land and Water Conservation Fund and \$4.0 million set aside from the Migratory Bird Conservation Account for Back Bay acquisitions. As of May 1993, 3100 acres had been acquired. An Environmental Assessment (1989) and Land Protection Plan (1990) are on file at the Refuge office.

Several utility rights-of-way bisect portions of the Refuge including electric lines owned by Virginia Power and telephone lines owned by GTE of Virginia. The electric lines supply power to False Cape State Park and the community of Corova Beach, North Carolina. Numerous other utility and ingress/egress rights-of-way crisscross inholding tracts within the Refuge boundary. A notable example is the proposed Ferrell Parkway right-of-way which the City has recently purchased. This planned four-lane highway bisects several Refuge inholdings and its construction would destroy a significant amount of wetlands and impact additional surrounding habitats.

The State of Virginia claims title to all riparian lands, including Bay bottoms. Acquired lands that have riparian or other title claims/discrepancies attached are designated in Figures 3, 3a, and 3b with a dash and Roman Numeral (e.g. 216a-I).

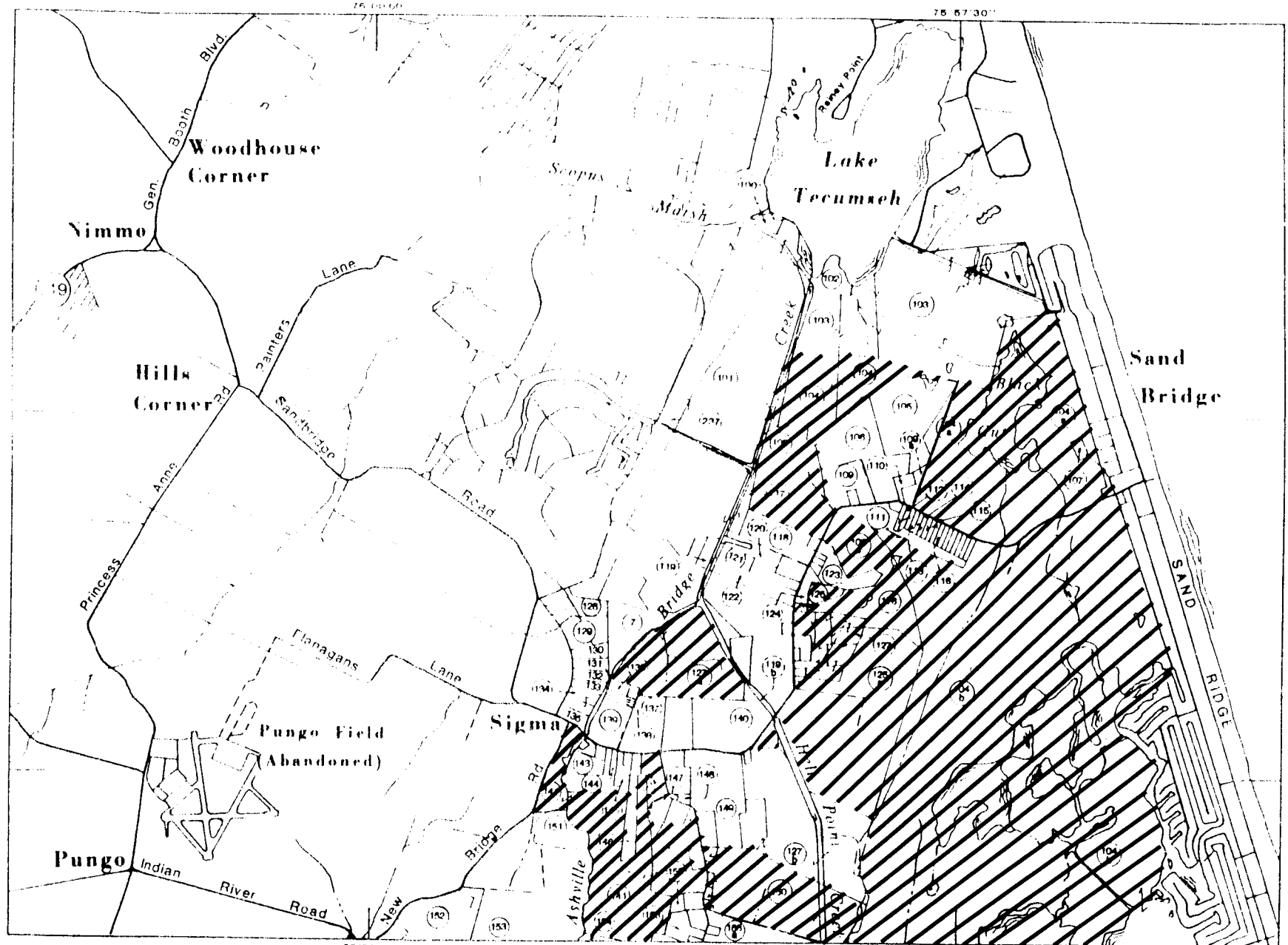


# BACK BAY NATIONAL WILDLIFE REFUGE

CITY OF VIRGINIA BEACH, VIRGINIA

UNITED STATES  
FISH AND WILDLIFE SERVICE

UNITED STATES  
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY  
FROM SURVEYS BY U.S.G.S. AND U.S.F.W.S.

NEWTON CORNER MASSACHUSETTS JULY, 1980

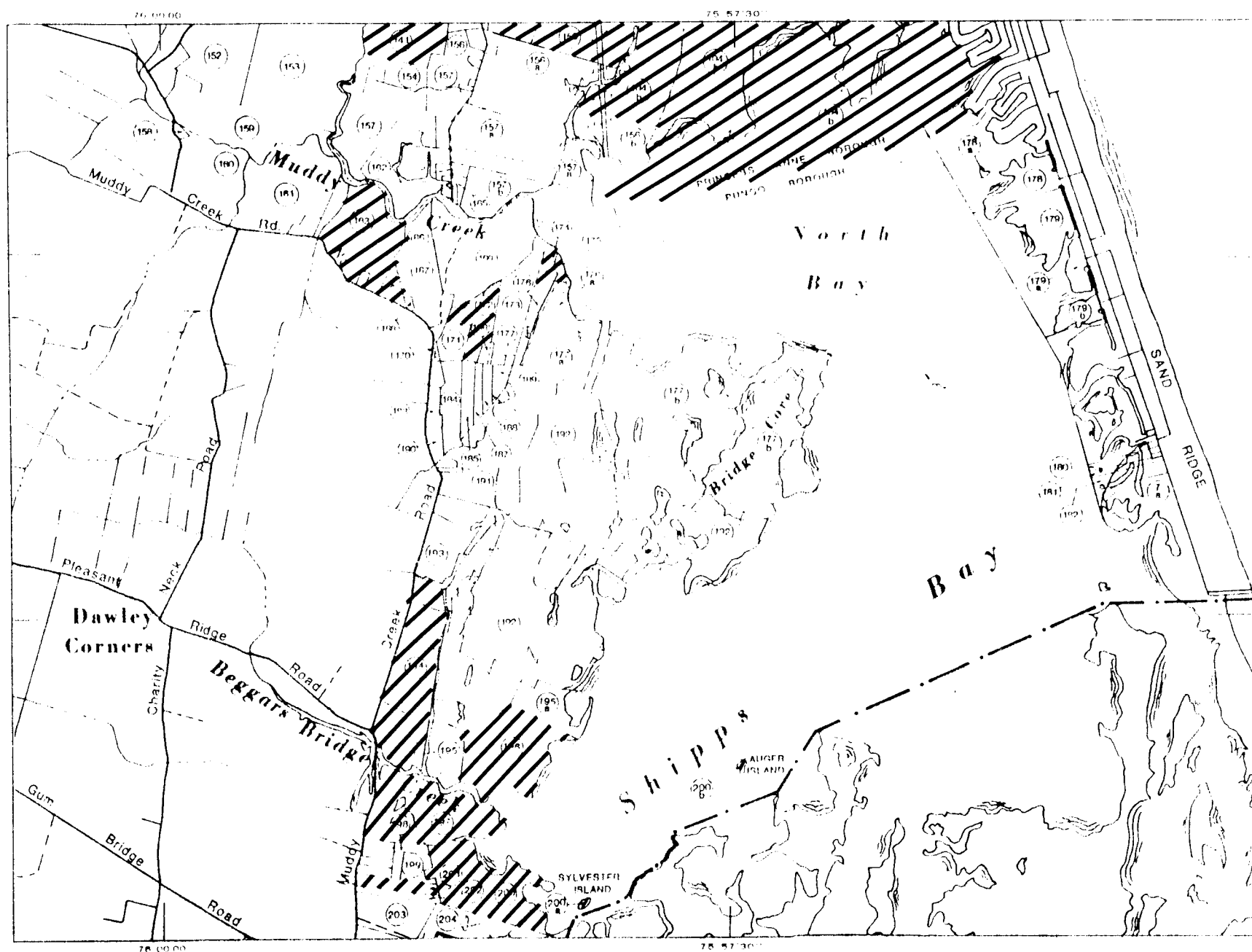
FIGURE 3a

# BACK BAY NATIONAL WILDLIFE REFUGE

CITY OF VIRGINIA BEACH, VIRGINIA

UNITED STATES  
DEPARTMENT OF THE INTERIOR

UNITED STATES  
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY  
FROM SURVEYS BY U.S.G.S. AND U.S.F.W.S.

NEWTON CORNER, MASSACHUSETTS, JULY, 1990

FIGURE 3b

5R VA 248





## HISTORIC MANAGEMENT DIRECTION

This section is divided into three categories: A) Public Use, which includes the volunteer and entrance fee programs, B) Wildlife and Habitat Management, and C) Major Facilities and Equipment. Public hunting and trapping programs, which are primarily wildlife management tools, are included under both public use and wildlife management.

### A. Public Use

Prior to 1986, a large portion of the Refuge's public use was of a non-wildlife-oriented nature, involving activities such as swimming, sunbathing, and surfing. With residential growth escalating and tourism becoming a major industry, use of this type consistently increased each year. Gradually, problems began to result due to demands for parking, traffic congestion at the Refuge entrance, a lack of opportunities for wildlife-oriented users, negative impacts to the dune habitat, interference with resting/feeding shorebirds (including the piping plover), and an eroding image as an area whose main objective was/is to provide habitat and protection for migratory waterfowl. In 1986, with the piping plover's addition to the threatened species list and with the history of recorded problems resulting from non-wildlife-oriented use, the Refuge initiated actions aimed at phasing out these inappropriate activities.

Over the next several years, and coinciding with this shift in emphasis, a decline in annual visits to the Refuge was experienced. During this same period, and continuing to the present time, there exists a recognizable trend away from summer use. June, July, and August, although still months of inflated activity, are beginning to level off and "fall into line" with use occurring during other months. By comparison, October, November, and December, traditionally months of heavy use at most waterfowl Refuges, are beginning to show a relative increase in visitor activity at Back Bay NWR. This trend is expected to continue over the next 3-5 years and beyond.

The decline in annual visits to the Refuge since 1986 is also attributed to the initiation of an entrance fee program, established in May of 1988. Studies conducted by the National Park Service indicate that declines in visitation are not unusual when implementing fees. Use generally begins to recover after the second year of collecting, as the public becomes accustomed to the new procedures and becomes more aware of the benefits derived from the program. Thus, the Refuge expected and observed a gradual increase in visits during the early 1990's which should continue in subsequent years. Whether or not visitation will eventually climb to the levels experienced in 1986, remains to be seen. Regardless, the shift away from a non-wildlife-oriented recreation program to one which focuses on wildlife-oriented interpretation and environmental education will certainly provide for higher quality visits which directly support the Service mission.



Table 3 displays current public use outputs by number of visits per season. The "current" figures were derived from a five year average (86-90) conducted for each output/activity.

Much of the Refuge's public use is from Virginia Beach residents and their nearby neighbors, although regular use has been recorded by visitors from adjacent states and such major metropolitan areas as Richmond, Washington D.C., Baltimore, and Philadelphia. Annual visitation from 1982 to 1992 ranged from a low of 65,038 visits in 1984 to a high of 149,617 visits in 1986. The ten year average (Figure 4) for annual visitation is 107,549 and the average for those years since phasing to wildlife-oriented activities (1986 - 1992) is 102,336. Annual visitation for the most recent period (1992) was 93,720.

For activities not having traditional outputs such as the entrance fee and volunteer programs, Table 4 has been included to provide some measure of public participation.

**TABLE 3. Public Use Summary - Outputs/Activities (Visits  
5-YEAR AVERAGE 1986 - 1990)**

	SPRING	SUMMER	FALL	WINTER	TOTAL
<b>Public Relations<sup>1</sup></b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>8</b>	<b>45</b>
<b>Entrance Fee Program<sup>2</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Volunteer Program<sup>2</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Outdoor Classroom (S)</b>	<b>1,052</b>	<b>272</b>	<b>1,263</b>	<b>270</b>	<b>2,857</b>
<b>Outdoor Classroom (T)</b>	<b>124</b>	<b>45</b>	<b>149</b>	<b>28</b>	<b>346</b>
<b>Interpretive (Conducted)</b>	<b>765</b>	<b>467</b>	<b>695</b>	<b>283</b>	<b>2,210</b>
<b>Interpretive (Self-guided)</b>	<b>5,441</b>	<b>4,852</b>	<b>6,584</b>	<b>6,845</b>	<b>23,722</b>
<b>Interpretive (VCS)</b>	<b>2,254</b>	<b>3,799</b>	<b>3,421</b>	<b>1,098</b>	<b>10,572</b>
<b>Wildlife/Wildlands Obs.<sup>3</sup></b>	<b>11,318</b>	<b>11,593</b>	<b>12,017</b>	<b>13,943</b>	<b>48,871</b>
<b>Photography</b>	<b>974</b>	<b>769</b>	<b>1,101</b>	<b>1,416</b>	<b>4,260</b>
<b>Walking/hiking</b>	<b>7,508</b>	<b>7,184</b>	<b>8,101</b>	<b>9,205</b>	<b>31,998</b>
<b>Bicycling</b>	<b>2,836</b>	<b>3,640</b>	<b>2,815</b>	<b>3,322</b>	<b>12,613</b>
<b>Canoeing/Rowboating<sup>4</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Hunting (Big Game)</b>	<b>---</b>	<b>---</b>	<b>483</b>	<b>---</b>	<b>483</b>
<b>Warmwater Fishing</b>	<b>1,616</b>	<b>1,756</b>	<b>626</b>	<b>409</b>	<b>4,407</b>
<b>Saltwater Fishing</b>	<b>1,846</b>	<b>3,719</b>	<b>1,335</b>	<b>150</b>	<b>7,050</b>
<b>Crabbing</b>	<b>204</b>	<b>614</b>	<b>82</b>	<b>---</b>	<b>900</b>
<b>Cooperating Association<sup>5</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Trapping<sup>6</sup></b>	<b>5</b>	<b>---</b>	<b>---</b>	<b>47</b>	<b>52</b>

<sup>1</sup>Denotes number of news releases.

<sup>2</sup>See Exhibit 3

<sup>3</sup>Includes photography, walking/hiking, bicycling, canoeing/rowboating

<sup>4</sup>No boating/canoeing occurs on Refuge waters. Back Bay is controlled by the Virginia Department of Game and Inland Fisheries.

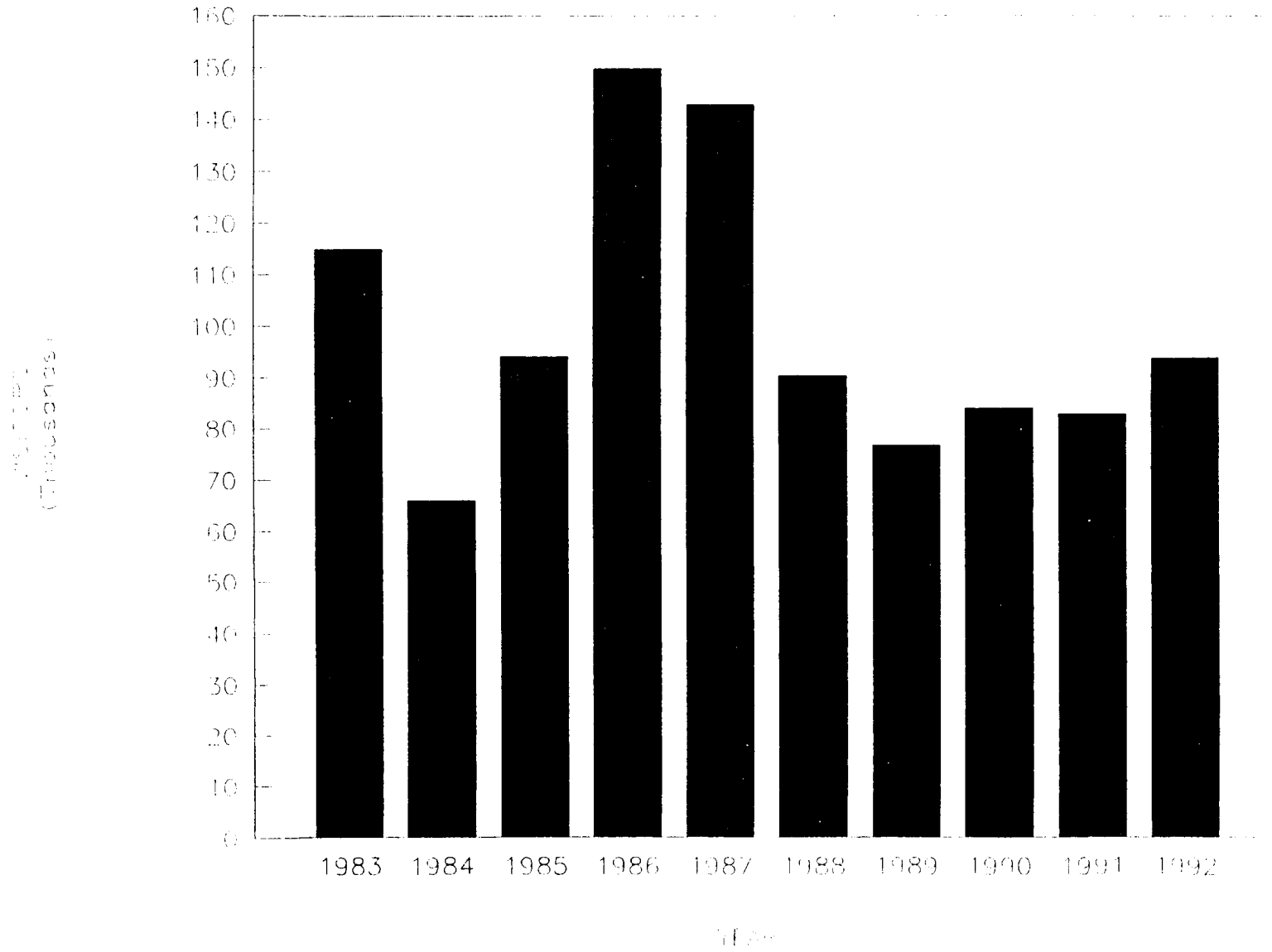
<sup>5</sup>No Cooperating Association exists at the current time.

<sup>6</sup>Trapping figures are for the period 1986-1989. No trapping occurred in 1990.



**FIGURE 4**

PUBLIC VISITATION PACIFIC RAY NWP



**TABLE 4. Entrance Fee and Volunteer Program Data**

**Funds/Passport Issuance Generated By Entrance Fee Program**

	1990	1991	1992
Daily Permits/Special Fees	\$22,191.55	\$21,981.18	\$23,819.91
Duck Stamp Sales	3,062.50	2,002.50	2,415.00
Golden Eagle Sales	<u>825.00</u>	<u>700.00</u>	<u>600.00</u>
<b>TOTAL COLLECTED FUNDS</b>	<b>\$26,079.05</b>	<b>\$24,683.68</b>	<b>\$26,834.91</b>
 Golden Age Passports	 152	 118	 97
Golden Access Passports	16	4	14

**Volunteer Numbers/Hours**

	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	Five Year Average
# Volunteers	74	150	100	73	137	107
 Volunteer Hours Contributed	 2,389	 3,091	 1,850	 1,113	 2,393	 2,167

**Buy Duck  
Stamps**



**for the FUTURE of WATERFOWL**

At most Post Offices and National Wildlife Refuges

## B. Wildlife and Habitat Management

Biological resource management is geared toward providing habitat for migratory birds, especially waterfowl and shorebirds, and threatened and endangered species. Following are the major management practices employed to improve habitats on the barrier spit (no resource management has occurred on new acquisitions prior to 1991): Water level manipulation within impoundments, disking, root raking, prescribed burning, mowing, planting, and wildlife inventories.

Table 5 summarizes some of the Refuge's major habitat improvement efforts over the past five years.

TABLE 5 - Habitat Management Activities					
<u>Activity</u>	<u>Acres Treated</u>				
	1986	1987	1988	1989	1990
Prescribed burning	130	30	60	135	540
Disking/root raking	167	0	45	120	65
Mowing	---	---	40	40	34
Pest plant control	10	50	---	---	150
Planting	---	---	---	75	34

In addition to the above activities, the Refuge is currently (1993) engaged in the final stages of a major rehabilitation of the impoundment system. This three-year project will result in the creation of a 45 acre sub-impoundment (storage pool) within the existing C-Pool; a 13-acre water transport flume within B-Pool; 3 new impoundments east of the east dike (by extending the A/B and B/C crossdikes east to the back dune line); adding and/or replacing at least 13 water control structures; excavating an additional 8 miles of ditches; and the raising and resloping of all existing dikes. Ducks Unlimited is providing matching funds of \$187,000 to help offset the costs of the project. Major construction components of the project are being handled force account, primarily by Refuge staff.

Artificial nesting structures are provided and maintained on the Refuge for wood ducks, osprey, and purple martins. Wood duck nesting boxes receive substantial use by other species as well, including screech owls and flickers. Between 1986 and 1990, the Refuge's wood duck nesting box program received modest attention and there was no documentation of any fledgling survival during the period. Between 1990 and 1992, Refuge biological staff performed a complete review of the program and instituted some changes that will hopefully lead to increased production. Numbers of boxes increased from 16 to 35 between 1986-92.

During the same period, osprey nesting platforms fared much better. Between 11 and 16 platforms were available for use and at least 21 birds were fledged during the '86 to '91 period. No figures were available for 1988 success although use of five platforms by osprey is documented for the year.



Seasonal closure of the north mile of Refuge beach was first enacted in 1986 to protect shorebird habitat and encourage piping plover nesting. During that year, the northern-most quarter mile of beach was left open for swimming and sunbathing. In 1987, the entire north mile was closed to these and other activities including surfing and fishing. Only through-foot and bike traffic is permitted in a small posted strip along the normal high tide line. The Refuge beach is checked daily during the summer for shorebird use, especially by piping plovers.

The beach is also surveyed daily throughout the summer for signs of nesting loggerhead sea turtles. If a nest is discovered, the eggs are transferred to a predator-proof cage and re-buried in a safe location. They are then monitored and, after hatching, released into the ocean.

In other sea turtle activities, the Refuge is involved in a cooperative study with the Virginia Institute of Marine Science, the Virginia Marine Science Museum, and the Columbus (Ohio) Zoological Gardens involving hatchling loggerheads. Objectives of the study are to: 1) document how size and diet of enclosures affects growth rates, 2) investigate ontogenetic changes of swimming behavior, and 3) to monitor at-sea behavior of head-start turtles to determine their fates. The Refuge's primary responsibilities are to issue and monitor special use permits and to provide eggs/hatchlings, funding, and a release site.

Public deer hunting has been permitted on the Refuge since 1986 to keep populations in check and improve the health of the herd. Between 1986 and 1992, harvest ranged from 142 in 1986 to 48 in 1992. Average harvest during the period was 63. Taking of both sexes is allowed with both bow and shotgun. Bow hunting has been limited from 17% to 25% of total available hunting days. Indications are that the herd is stabilizing and health indices are improving. The hunt is also a cooperative venture with False Cape State Park, whose hunting season is planned to coincide with the Refuge's.

A public trapping program has been in effect at the Refuge since 1970. However, trappers have shown little or no interest in the program for the past six years. No trapping occurred during 1985, or during the period from 1988-1993. With the exception of 1987, low fur prices have been the norm and this is the suspected cause of disinterest. Nutria are the cause of considerable concern on the part of Refuge staff due to their tendency to undermine dikes and water control structures. An interim proposal was approved in 1990 to allow Refuge staff to reduce nutria numbers, under certain conditions, throughout the year.

Two introduced feral animals, hogs and horses, are present on the Refuge and are the object of considerable expenditures of staff time and funds. Both of these species consume and destroy vegetation that is valuable to a variety of native migratory and resident wildlife. Other problems also exist in dealing with hog damage to roads and cleaning horse manure from sidewalks and trails near the Visitor Contact Station. Public safety is also an issue since some visitors try to approach horses, unaware of the danger involved. Taking of feral hogs is permitted during the deer hunt and they are included in the interim animal control plan mentioned above. Removal of horses from the Refuge has proven to be more controversial, due to the public's apparent interest in observing them on the Refuge and the attention feral horses elicit from the public and the media. As of early 1993 no feral horses are present on the Refuge.

TABLE 6

U.S. Department Of The Interior  
Fish And Wildlife Service

Page 1 Of 3

# REAL PROPERTY INVENTORY OF OTHER STRUCTURES AND FACILITIES

I-FWS 248GSA No. 1435-0934700Field Station Back Bay NWR

Division: \_\_\_\_\_

Date 10/10/90State: VirginiaCounty (s): City of Virginia Beach

Prop. No.	GSA Code	Tract No.	City Code	County Code	Kind	Facility Code	Description Of Bldg.	Const Code	Size		Year Acq'd		Cost (Thousands)	Est. Repl. Cost (Thousands)
									No	Type	From	To		
14	76	39	2540	999	Road	567	Beach ramp for vehicle access	69A	450	LNFT	1940	1984	1.0	5.0
17	76	39f	2540	999	Bridge	329	Long Island Bridge, wood	60H	30	LNFT	1941	1979	0.5	7.0
20	80	39	2540	999	Dock	449	Dock with wooden boat ramp	63C	3255	SQFT	1941	1982	0.2	3.0
21	80	39	2540	999	Dike	435	Earthen dike system	74A	18000	LNFT	1963	1984	129.1	140.0
23	76	39	2540	999	Public use road	320	Paved entrance road	69A	5300	LNFT	1967	1983	0.3	3.0
27	71	39	2540	999	Sewage treatment facilities	215	For office/visitor sta., with fence	73H	8100	SQFT	1988	1988	44.9	44.9
28	80	39	2540	999	Fence	553	Security fence-maintenance compound	64F	870	LNFT	1979	1982	6.0	7.0
29	80	39f	2540	999	Bulkhead	451	Aluminum bulkhead - Long Island	68B	1000	LNFT	1978	1978	40.0	50.0
30	80	39	2540	999	Water control structures	440	A & C pool drain offs	74B	104	LNFT	1979	1979	20.0	55.0
31	71	39	2540	999	Pumping station	441	Two pumps with piping	73J	116	LNFT	1981	1981	100.0	120.0
32	80	39	2540	999	Boardwalk	328	Trail/walkway, wood	72F	1100	LNFT	1980	1983	6.0	7.0
35	80	39	2540	999	Visitor parking lot	322	Asphalt with concrete curbing	66A	37697	SQFT	1985	1985	70.8	70.8
39	80	39	2540	999	Portable boardwalk	328	Seaside Trail, wood, 3'x915'	72F	915	LNFT	1988	1988	3.5	3.5
41	80	39	2540	999	Beach access gate	554	18' electronic arm, 2 card readers	64J	18	LNFT	1989	1989	8.0	8.0
42	80	39	2540	999	Refuge entrance gates	554	Two 20' metal electronic gates	64J	40	LNFT	1989	1989	45.2	45.2
48	80	172	2540	999	Swimming Pool	567	Inground, vinyl lined		648	SQFT	1991	1991	9.4	9.4
49	80	172	2540	999	Fence	553	3 Rail wood and post	64I	370	LNFT	1991	1991	0.9	0.9
54	18	39	2540	999	Earthen Dike	435	Earthen Dike with gravel top	74A	38000	LNFT	1993	1993	558.0	558.0
55	80	39	2540	999	Public access trail	328	Gravel and stone with toe boards	72D	1450	LNFT	1993	1993	8.0	8.0
56	80	39	2540	999	Metal gate	554	Metal gate set in concrete	64C	31	LNFT	1993	1993	1.0	1.0
57	80	39	2540	999	Flag Pole	567	Fiberglass		N/A	N/A	1990	1990	1.5	1.5
58	18	39	2540	999	Water Control Structure	440	Aluminum	74E	40	LNFT	1993	1993	3.0	3.0
59					"									
60					"									
61					"									

TABLE 6a

U.S. Department Of The Interior  
Fish And Wildlife Service

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## REAL PROPERTY INVENTORY OF OTHER STRUCTURES AND FACILITIES

I-FWS: 248

GSA No.: 1535-0934700

Date: 7-15-93

Field Station: Back Bay NWR

Division:

State: Virginia

County (s): City of Virginia Beach

Prop No	GSA Code	Tract No	City Code	Cnty Code	Kind	Facility Code	Description of Bldg	Const Code	Size No.	Size Type	Year From	Year To	Cost (Thousands)	Est. Repl Cost
62	18	39	2540	999	Water Control Structure	440	Aluminum	74E	40	LNFT	1993	1993	3.0	3.0
63					"									
64					"									
65					"									
66					"									
67					"									
68					"									
69					"									
70					"									
71					"									
73	80	39	2540	999	Interpretive Kiosk	567	Wood with Fiber Embedment Panels		N/A	N/A	1992	1992	13.5	14.0
74	80	39	2540	999	Interpretive Kiosk	567	Wood with Fiber Embedment Panels		N/A	N/A	1993	1993	10.0	10.0
75	80	172	2540	999	Gate	554	Steel	64C	16	LNFT	1992	1992	.7	.7
76	80	172	2540	999	Gate	554	Steel	64C	16	LNFT	1992	1992	.7	.7
77	80	39	2540	999	Directional/Info. Signs	556	Wood		N/A	N/A	1993	1993	.2	.2
78					"									
79					"									
80					"									
81					"									
82					"									
83					"									
84					"									



TABLE 6b

U.S. Department Of The Interior  
Fish And Wildlife Service

Page 3 of 3

## REAL PROPERTY INVENTORY OF OTHER STRUCTURES AND FACILITIES

I-FWS: 248

Field Station: Back Bay NWR

Division: \_\_\_\_\_

GSA No.: 1435-0934700

State: Virginia

County (s): City of Virginia Beach

Date: 7-15-93

Prop No	GSA Code	Tract No	City Code	Cnty Code	Kind	Facility Code	Description of Bldg	Const Code	Size No.	Size Type	Year From	Year To	Cost (Thousands)	Est Repl Cost
85	80	39	2540	999	Directional/Informational Signs	556	Wood		N/A	N/A	1993	1993	.2	.2
86					"									
87					"									
88					"									
89					"									
90					"									
91					"									
92	80	141	2540	999	Entrance Sign	556	Wood		N/A	N/A	1993	1993	.4	.4
93	80	104A	2540	999	Entrance Sign	556	Wood		N/A	N/A	1993	1993	.4	.4
94	80	39	2540	999	Interpretive Sign	556	Fiber Embedment Panels in Wood		N/A	N/A	1993	1993	1.3	1.3
95					"									
96					"									
97					"									
98	80	39	2540	999	Public Access Boardwalk	328	Wood	72F	800	LNFT	1993	1993	24.0	24.0
99	80	163	2540	999	Gate	554	Metal	64C	28	LNFT	1992	1992	1.0	1.0

U.S. Department Of The Interior  
Fish And Wildlife Service

I-FWS 248

GSA No. 1435-0934700

Date 10/10/90

Field Station        Back Bay NWR

Division:

State:                      Virginia

County (s): City of Virginia Beach

Date 10/10/90

30



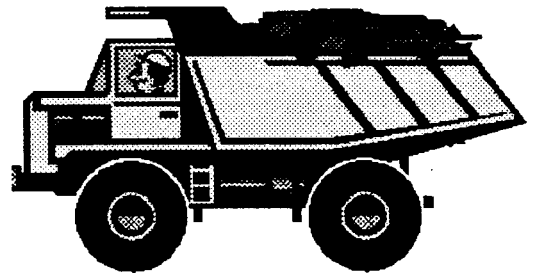
## C. Major Facilities and Equipment

Major Structures and Facilities (Figure 7) and Buildings (Figure 8) are listed below. Real Property # 45, Mobile Home with Addition, was destroyed by arson fire in January, 1991. Additional facilities will be added after the completion of boardwalk and gravel trails around the Headquarters/ Visitor Contact Station and the impoundment rehab project.

Major equipment is listed below:

### Vehicles (Trucks and passenger vehicles)

1992 Dodge Dakota PU 4x4  
1989 Ford Bronco 4x4 (LE vehicle)  
1989 Dodge PU 4x4  
1988 Chevrolet Suburban 4x4  
1988 Chevrolet Dump Truck (1 ton)  
1987 Dodge PU 2x4  
1985 Plymouth Reliant wagon  
1984 Chevrolet S-10 PU 4x4  
1979 Mack Dump Truck (12 cu.yd.)  
1970 Bus (36-passenger)  
1969 Ford Stake-body Truck



### Heavy Equipment

AC Front-end Loader  
Ford Backhoe/Loader  
JD 4240 Farm Tractor  
Ford Farm Tractor  
JD 550A Dozer/Crawler  
Champion Road Grader

### All Terrain Vehicles

1991 Honda 4 - Trax 4x4  
1990 Yamaha TerraPro 4x4  
1988 Suzuki 4x4

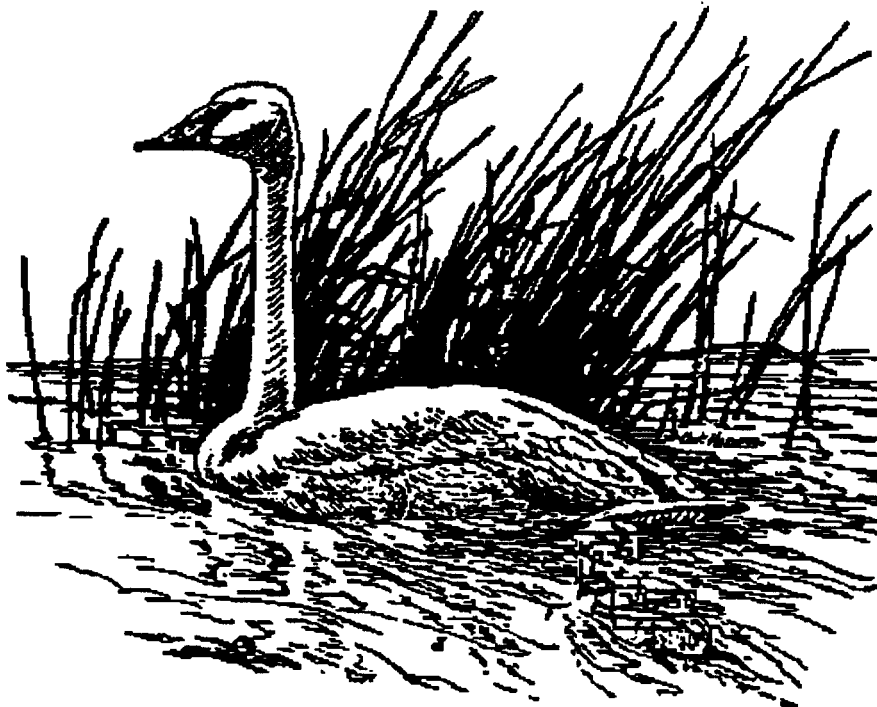
The Refuge also has various attachments for the equipment listed above including a kewanee disk, mowers, pump, auger, and seeder. In addition, the maintenance compound is well-stocked with a variety of hand and power tools.

## AGREEMENTS AND PERMITS

The Refuge is involved in several cooperative ventures. The two major partners are Ducks Unlimited, Inc. who is cost sharing the impoundment rehab project, and the Virginia Institute of Marine Science, who is coordinating the "Head Start" sea turtle program. Both of these programs are discussed briefly above under Habitat and Wildlife Management. The Refuge has no formal Cooperative Fire Agreement, or any other formal agreements, with the City, State, or any other Federal agencies. The Service has a cooperative fire agreement with the State of Virginia.

There are several long-term research studies being conducted on the Refuge that are handled through issuance of Special Use Permits. One involves a beach grass planting study, another is for scientific collecting of vascular plant specimens. Intermittent access is also permitted for shoreline/erosion studies/measurements conducted by the City and the Corps of Engineers. By far the most complex and time-consuming permit program is the Motor Vehicle Access Permit Program (MVAPP). This program is discussed in the Introduction section and current regulations and background information is attached (Appendix 3).

Eighty Special Use Permits were issued during 1992. Forty-one of these permits were issued under the Motor Vehicle Access Permit Program (MVAPP). The remaining 39 permits were issued for a variety of recreational, educational, special privileges (weddings) and research related purposes. The Refuge continued to charge a user fee of those groups requesting special privileges, special services, or who charged a fee for participating in group activities on the Refuge.



## EXISTING MANAGEMENT PLAN CHAPTERS

The following management plans have been prepared, approved or are being prepared:

<u>Management Plan Chapter</u>	<u>Latest Date of Approval/Revision</u>
Safety Management Plan	3/18/93
Marsh and Water Management Plan*	
Fire Management Plan**	03/20/87
Furbearer Trapping Management Plan	10/19/89
Disease Prevention and Control Plan	01/23/85
Public Use Management Plan	02/23/90
Hunting Plan	08/03/89
Law Enforcement Plan	12/28/90
Search and Rescue Plan	undated
Wildlife Inventory Plan	05/23/89
Interim Animal Control Proposal	01/11/91
Land Protection Plan	02/15/90

\* Draft being prepared

\*\* Plan needs revision; awaiting revision of guidelines

## LITERATURE CITED - PART ONE

Howard, Needles, Tammen, and Bergendoff. 1976. False Cape - Environmental Assessment Report on Alternative Park Access. Alexandria, Virginia.

Mann Associates, Roy. 1984. A Management Plan for Back Bay (Volumes 1 and 2). City of Virginia Beach, Virginia.

Tyndall, R.W. 1977. Plant Distribution and Succession Within Intertidal Depressions on a Virginia Barrier Dune System. M.S. Thesis, Old Dominion University, Norfolk, Virginia.



## **PART TWO - MANAGEMENT OBJECTIVES AND STRATEGY**

### **CURRENT MANAGEMENT GUIDANCE AND DIRECTION**

#### **A. Legal Direction**

Legal direction for management is provided through the executive orders, acts, laws, and regulations which authorized establishment of, or authorized other actions on, these refuges. Direction is also provided by those acts, laws, and regulations which apply to all refuges within the National Wildlife Refuge System.

Management must also comply with federal environmental laws, executive orders and regulations affecting land and water use as well as the conservation and management of fish and wildlife resources. Management is further guided by the National Wildlife Refuge System Administration Act of 1966 that authorized the Secretary of the Interior to permit uses of a refuge: "...whenever he determines that such uses are compatible with the major purposes for which such areas were established." The Refuge Recreation Act of 1962 also requires that any recreational use of refuge lands be compatible with the primary purposes for which a refuge was established and not inconsistent with other previously authorized operations.

The National Historic Preservation Act of 1966 provides for the protection, rehabilitation and restoration of historic and archaeological resources that occur on any refuge.

The "purposes" of Back Bay Refuge are as follows:

"... as a refuge and breeding ground for migratory birds and other wildlife."  
Executive Order 7907, dated June 6, 1938

"... for use as an inviolate sanctuary, or for any other management purpose,  
for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act)

"... the conservation of wetlands of the Nation in order to maintain the public  
benefits they provide and to help fulfill international obligations contained in  
various migratory bird treaties and conventions..." 16 U.S.C. 3901(b). 100  
Stat. 3583 (Emergency Wetlands Resources Act of 1986)

#### **B. Policy Direction**

The policies of the Fish and Wildlife Service for the National Wildlife Refuge System are stated in its primary management document, the Refuge Manual:



The goal of the National Wildlife Refuge System is “to provide, preserve, restore and manage a national network of lands and waters sufficient in size, diversity, and location to meet society’s needs for areas where the widest possible spectrum of benefits associated with wildlife and wildlands is enhanced and made available.”

To achieve this goal, each refuge emphasizes specific contributions it can make that are consistent with the following long-range System objectives (given in priority order):

1. To preserve, restore, and enhance in their natural ecosystem (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered.
2. To perpetuate the migratory bird resource.
3. To preserve a natural diversity and abundance of fauna and flora on refuge lands.
4. To provide an understanding and appreciation of fish and wildlife ecology and people’s role in their environment, and to provide refuge visitors with high quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife to the extent these activities are compatible with the purposes for which the refuge was established.

#### **C. Historic Refuge Management Direction and Priorities**

The only management objectives Back Bay Refuge had prior to this planning effort were stated in the 1972 Master Plan:

1. To develop and manage the Refuge for a full spectrum of wildlife with special emphasis on waterfowl and shorebirds and cooperate with other agencies in improving and maintaining good waterfowl habitat in Back Bay.
2. To help save all species of wildlife on the refuge whose survival is in jeopardy: mainly the Ipswich sparrow, the peregrine falcon, the bald eagle and the osprey.
3. To provide Refuge visitors with opportunities for conservation education and wildlife-oriented recreation.
4. To preserve the Refuge beach for wildlife-oriented recreation and for the basic needs of nesting shore birds.
5. To provide universities, colleges, and public schools with an outdoor classroom for environmental education with special emphasis on wildlife and habitat management.

6. To preserve portions of the Refuge in a natural state, including a stand of live oaks near the northern limits of the live oak range.

These broad objectives provide basic direction even though they have not been updated for many years. Management has evolved as much from reaction to ongoing situations and problems as it has from these objectives.

Back Bay Refuge has nearly completed a three-year project to rehabilitate and improve the management efficiency of the Refuge impoundment system. Until it is completed, this large and labor intensive project will dominate the allocation of Refuge resources to other priorities. Other management priorities reflect the wildlife opportunities at the Refuge. The Refuge beach is part of the longest, relatively undisturbed beach in the area, making it very important to migrating waterbirds and, potentially, piping plover nesting. The Refuge currently monitors bird use and closely controls beach access. Controlled burning of wetlands and uplands and discing, root raking and planting is done on other uplands to improve food availability for wintering waterfowl and other migratory birds.

Public use management is being guided by the Refuge's 1990 Public Use Management Plan. Among other things the public is informed about the need to control beach access and about the temporary disturbance caused by impoundment rehabilitation. An outdoor classroom was completed in spring of 1991 to increase the quality of programs available to local schools who use the Refuge for fish and wildlife education. A second outdoor classroom site is planned for 1994.

Since its initial land acquisition in 1938, Back Bay Refuge did not acquire additional land until 1990 when a major expansion of the Refuge was initiated. The acquisition boundary was expanded by 6340 acres in 1989. Since then additional land has been purchased within that boundary and the trend is expected to continue. Land within the new boundary is primarily on the north and west sides of Back Bay. As this land is acquired significant management burdens are placed on the Refuge staff. For example, boundaries must be posted, the public must be made aware of land purchases and their implication to traditional uses, and incompatible and inconsistent uses must be documented and brought into compliance with FWS policy. Such tasks cannot be delayed or they will create more difficult management problems in the future. In spite of this, additional staffing has not kept pace with land acquisition. The consequences are obvious; some ongoing management needs at the existing Refuge have been given lower priority through this planning process.

Plum Tree Island Refuge has no current objectives. Management is limited to periodic visits by Back Bay Refuge staff to monitor wildlife and conduct basic law enforcement patrols. Periodic interaction occurs with the U.S. Air Force because fuel tanks from aircraft approaching Langley Air Force Base are occasionally jettisoned on the Refuge.

Potentially controversial items on the horizon at Plum Tree Island are mosquito control and land acquisition. Chemical mosquito control is conducted in the marshes adjacent to Plum Tree Island but not permitted on the Refuge itself. Back Bay staff have sampled Refuge marshes for mosquito larvae and found that the daily flooding regime prevents the majority of Refuge marshes from acting as mosquito breeding habitat. This opinion disagrees with those of many local inhabitants and the Air Force, which conducts the control operations from adjacent Langley Air Force Base. The Service favors an Integrated Pest Management approach to mosquito control at Plum Tree Island NWR.

A Fish and Wildlife Service proposal to expand Plum Tree Island has been released for public comment during May of 1993. The Draft Environmental Assessment identifies a variety of alternatives that could provide long-term protection to the important wildlife habitat located to the west of the existing Plum Tree Island Refuge in the City of Poquoson, Virginia. The Assessment was prepared based on a study of the wetland and critical edge habitats adjacent to the existing Refuge. The Service consulted with other resource professionals in the State during the preparation of the document.



## BACK BAY REFUGE MANAGEMENT ISSUES

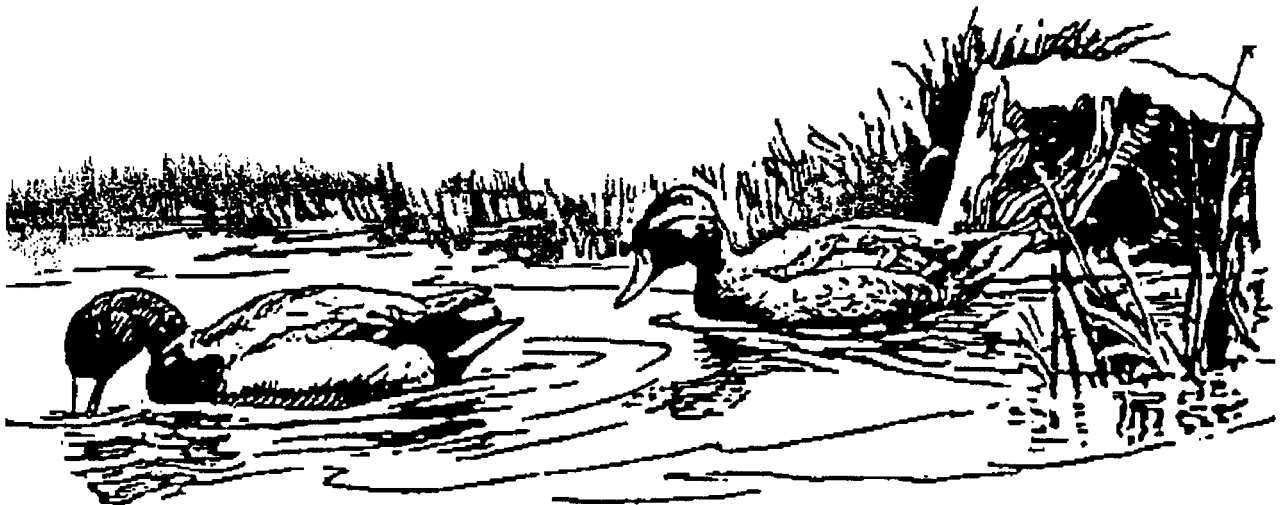
The planning group that convened in March of 1991, determined that the following issues are of current concern and require management actions during the 3-5 year time span of this plan.

1. Lack of adequate biological information hinders the Refuge Manager's ability to make **timely and accurate** wildlife and habitat management decisions.
2. Significant increases in Refuge management responsibilities are occurring in proportion to **acquisition** of additional lands.
3. Back Bay wetlands are being overtaken by the spread of phragmites.
4. Feeding habits of feral hogs alter habitats, weaken dikes and diminish food sources of waterfowl and other indigenous wildlife species.
5. Feeding habits of feral horses alter habitats and diminish food sources of waterfowl and other indigenous wildlife species. Horses also have the potential to injure Refuge visitors, consume inordinate amounts of Refuge staff time and limited funds, and project a false image of the Service and its land management activities to the public.
6. Feeding habits of nutria undermine dikes, cause wetland loss and diminish muskrat food sources.
7. Deer hunting disturbs other wildlife and may conflict with impoundment water level management.
8. The public unrealistically expects the Service to have the responsibility and capability to protect Back Bay water quality and all wildlife associated with the Back Bay area.
9. Motor vehicle access across the Refuge beach and dikes: 1) disturbs wildlife; 2) conflicts with other public uses; and 3) places inordinate burdens on Refuge funds and staff time.
10. The proximity of State and City parks confuses the public and causes an identity problem for the Refuge and Refuge staff.
11. Decline of water quality in Back Bay has degraded, and will continue to degrade, fish, wildlife and habitat.
12. Construction of the Ferrell Parkway as planned will 1) fill wetlands, 2) cross land within the Refuge acquisition boundary and 3) accelerate development of the Refuge watershed.
13. Pressure to provide additional non-wildlife oriented recreation will grow as development of the Back Bay and Virginia Beach/Chesapeake area brings more people in contact with the Refuge.
14. Further development of the Back Bay watershed will continue to degrade Back Bay and Refuge fish and wildlife resources.

15. Maintenance management is not keeping pace with use and deterioration of Refuge facilities, structures, and buildings.

### **PLUM TREE ISLAND REFUGE MANAGEMENT ISSUES**

1. Some members of the public have a “law enforcement only” understanding about the Service’s management of Plum Tree Island Refuge.
2. The wildlife management potential of Plum Tree Island is not well documented.
3. Chemical mosquito control may adversely affect Refuge habitat quality.
4. Unexploded ordinance creates a safety hazard on Refuge land.
5. A Refuge boundary expansion has been proposed.





### 3-5 YEAR MANAGEMENT ANALYSIS AND OBJECTIVE DEVELOPMENT

The following section expands on the issues identified above. Programs now in place at the Refuge are examined in terms of their current status, proposed actions within the next five years, and program needs required to begin resolving the most important issues. In addition, general objectives are listed to the right of the proposed action of each issue topic. These objectives were developed concurrently with the three to five year analysis to provide overall guidance to Refuge staff. A summary list of the objectives is appended.

When evaluating needs at Back Bay Refuge, management will concentrate on: 1) upgrading collection and management of wildlife and habitat information, 2) protecting beach dependent (threatened) wildlife species, 3) developing and implementing management programs for rehabilitated Refuge impoundments, 4) developing and implementing management programs for newly acquired lands, 5) continuing efforts to minimize wildlife disturbance caused by visitors on beaches and dikes, 6) enhancing use of the Refuge as a fish and wildlife education resource, 7) developing and implementing a management program for Plum Tree Island NWR and, 8) upgrading office space and administrative functions.

As these aims are pursued and other management options are revealed, they will be reviewed and, where necessary, updated by the Refuge Manager. This Station Management Plan will be reviewed, and updated if necessary, approximately three years from its approval date.

#### Wildlife Management

##### Data Management

###### *Current Status:*

The Refuge has a current wildlife inventory plan that is effective, given current staff situation. Data is stored manually. The Refuge biologist position was filled in 1991 and a 386 computer was purchased.

###### *Proposed Actions:*

The amount and complexity of wildlife data to be gathered will increase following completion of the impoundment rehabilitation project and as new lands are acquired. A computerized data storage system incorporating GIS will be developed for the Refuge. The Wildlife Inventory Plan will be upgraded to standardize data gathering techniques and to assure that data are consistent with the computerized system.

Additional staff and volunteer time will be dedicated to wildlife data gathering.

**OBJECTIVE #1.**  
**DEVELOP AND OPERATE AN**  
**EFFECTIVE WILDLIFE/HABI-**  
**TAT DATA MANAGEMENT**  
**SYSTEM FOR BACK BAY AND**  
**PLUM TREE ISLAND REFUGES**  
**(HIGH PRIORITY)**

### ***Program Needs:***

The computer system dedicated to data management must be upgraded with appropriate software and programs and a Refuge specific GIS system must be purchased and installed.

### **Piping Plover**

#### ***Current Status:***

Piping plovers have not been observed nesting on the Refuge Beach since the species was listed as threatened. Plovers are, however, observed in suitable nesting habitat during nesting seasons and in migration.

#### ***Proposed Actions:***

The Refuge staff will continue to monitor the beach for plovers. In areas where birds are seen exhibiting territorial behavior, and at sites where they establish nests, precautions will be taken to prevent human disturbance.

#### ***Program Needs:***

No additional staff or funds are needed to implement these plover management actions.



**OBJECTIVE #2.**  
**PROTECT MIGRATION AND**  
**NESTING HABITAT FOR**  
**PIPING PLOVERS, AND IF**  
**NESTING OCCURS, FLEDGE**  
**2.0 CHICKS PER ACTIVE**  
**NEST**  
**(HIGH PRIORITY)**

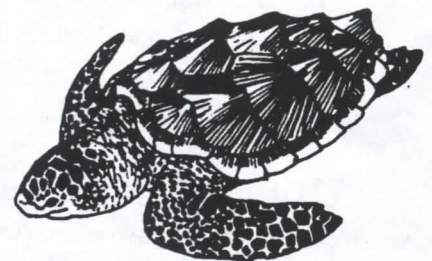
### **Loggerhead Sea Turtle**

#### ***Current Status:***

Loggerhead sea turtles occasionally nest on the Back Bay Refuge Beach, with a record nine nests transplanted in 1991.

#### ***Proposed Actions:***

Beach surveys will continue; when nests are found they will be relocated or left in place and protected from predators. Coordination with the VIMS "head start" program for sea turtles will continue. The Refuge will open dialogue with other agencies to more thoroughly cover potential nesting beaches during summer surveys. Coverage should extend from Cape Henry in the north to the VA/NC boundary in the south.



**OBJECTIVE #3.**  
**SUCCESSFULLY HATCH 90%**  
**OF THE LOGGERHEAD SEA**  
**TURTLE EGGS THAT ARE**  
**LAI D ON, OR TRANS-**  
**PLANTED TO, THE REFUGE**  
**(HIGH PRIORITY)**

### ***Program Needs:***

No additional staff or funds are needed to manage turtles that nest on or near the Refuge. Additional funds, seasonal employees, and 4 wheel drive ATV's are needed to expand the sea turtle program to other area beaches.

### **Wintering Waterfowl**

#### ***Current Status:***

The wetlands and open water habitats of Back Bay Refuge are important areas for wintering waterfowl. Refuge impoundments have been used by these birds since they were first constructed in the 1950's.



#### ***Proposed Actions:***

Impoundment rehabilitation will improve the quality of impoundment habitat and it will give the Refuge Manager greater management flexibility to assure that proper habitat conditions are available to migrating waterfowl. As the rehabilitation project nears completion emphasis will be placed on fine tuning the anticipated management benefits for wintering waterfowl. Initially 60% of the impoundment habitat will be dedicated to waterfowl. The Refuge Biologist will work with waterfowl experts to determine which portions of the impoundments are best suited to waterfowl and which water regimes for those areas will produce desired habitat types. During subsequent years results will be studied and adjustments to impoundment management techniques will be made based on those results.

**OBJECTIVE #4.  
PROVIDE SUFFICIENT HABITAT TO MAINTAIN HEALTHY WINTERING POPULATIONS OF:**

- DABBING DUCKS  
(HIGH PRIORITY)**
- CANADA GOOSE  
(HIGH PRIORITY)**
- SNOW GOOSE  
(MEDIUM PRIORITY)**

#### ***Program Needs:***

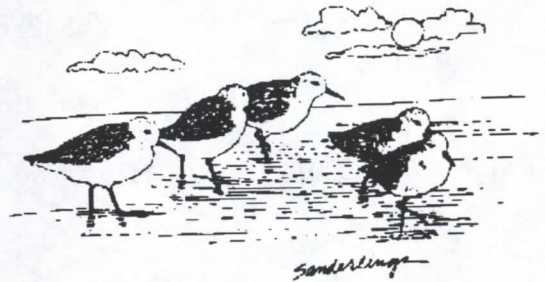
A Refuge Biologist has been hired and provided with the initial components of a computer system that can be used to manage impoundment data and assist with development of management programs. Further building of the computer capabilities of the Refuge, including a GIS system is needed. Implementation of management programs and maintenance of the impoundments can be accomplished with current staff and equipment.



## Shorebirds/Wading birds

### **Current Status:**

The Back Bay Refuge beach receives less human activity and disturbance than any beach in the area. It is therefore used extensively by shorebirds and other waterbirds, especially during migration. Wading birds depend on Refuge impoundments, wetlands and open water habitats for feeding throughout the year. There are no wading bird rookeries on the Refuge at this time but the potential for them to become established is high.



### **Proposed Actions:**

Control of public uses on the Refuge beach and around impoundments will continue to be a high priority management strategy to assure that these habitats are available to shore, wading and other water birds.

Habitat management actions to be taken on the beach would primarily involve managing sand to protect facilities (beach access ramp, paved entrance road, electronic gate).

Additional shorebird habitat will be provided in the rehabilitated impoundments. Initially about 40% of the impoundment area will be studied to determine which portions can be managed to favor populations of invertebrates and forage fish that will provide food for migrating shorebirds. A water level regime will then be used that will provide the mudflat and shallow water habitat types sought by these birds.

Control of public use on the beach during piping plover nesting and migration seasons will also benefit other species of migrating shorebirds. The hiring of an additional seasonal law enforcement and education personnel will enhance the effectiveness of controlling beach use during shorebird seasons.

### **Program Needs:**

The Refuge biologist must determine impoundment potential for shorebirds and to develop water level and other management programs that will favor habitat and food conditions desired by shorebirds. Implementation of these management programs can be accomplished with current staff and equipment.

#### **OBJECTIVE #5.**

**PROVIDE HABITAT TO ACCOMMODATE MIGRATING AND NESTING MIGRATORY BIRDS - SHOREBIRDS/WADING BIRDS (HIGH PRIORITY)**

## Raptors

### *Current Status:*

Osprey nest in the Refuge area and feed in Back Bay. Several species of upland raptors also nest on the Refuge and other species migrate through the Refuge where they prey on small birds and mammals.

Casual observations indicate that large numbers of raptors use the expansion area lands currently being acquired.

### *Proposed Actions:*

Raptor monitoring will continue and public uses in the area of known nest sites will be discouraged. No specific habitat management is proposed but raptors will benefit from small mammal populations that will thrive in mowed fields.

### *Program Needs:*

No additional staff or equipment is needed to monitor raptors.



#### **OBJECTIVE #5.**

**PROVIDE HABITAT TO ACCOMMODATE MIGRATING AND NESTING MIGRATORY BIRDS**

**- RAPTORS  
(LOW PRIORITY)**

## Woodcock

### *Current Status:*

The potential for woodcock nesting and migration on land being acquired on the west side of Back Bay is high.

### *Proposed Actions:*

The wildlife inventory plan will be updated to assure that newly acquired lands are systematically monitored for woodcock use. Concurrent with building an information base on woodcock, an upland habitat management plan will be developed and a management program that responds to that plan will be implemented.

#### **OBJECTIVE #5.**

**PROVIDE HABITAT TO ACCOMMODATE MIGRATING AND NESTING MIGRATORY BIRDS**

**- WOODCOCK  
(LOW PRIORITY)**



### ***Program Needs:***

Woodcock work on the expanded Refuge will require additional staff and equipment or a re-organization of the current workload. The Refuge biologist will write the woodcock monitoring portion of the wildlife inventory plan but an additional biological technician will be required to implement the monitoring. Additional computer support will be needed to manage the data. The biologist can also write the upland habitat management plan, once the data is available, but its implementation may not be accomplished with current staff and equipment. These needs cannot be determined until the plan is written.

### **Passerine Species**

#### ***Current Status:***

Many species of passerine birds nest on the Refuge and many more migrate through. These numbers will increase as land on the west side of Back Bay is acquired, protected, and managed.

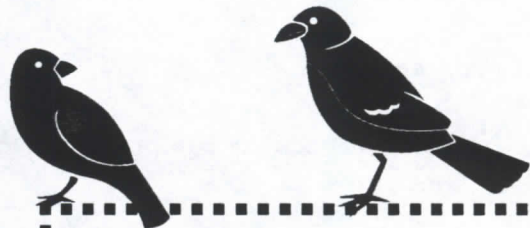
#### ***Proposed Actions:***

Passerine bird use of the Refuge will be monitored but no specific passerine bird management program is proposed. Incidental benefits from other management actions will occur. The Refuge staff will be encouraged to apply site specific songbird management actions in relation to routine work. An example would be to leave brush piles in place that could serve as cover for nesting songbirds. In addition, protection and development of large, unbroken blocks of shrub and forested habitat will aid nesting and neotropical migrant species.

Volunteers often express interest in working with these species. Their assistance will be sought.

#### ***Program Needs:***

No additional staff or equipment will be required for passerine bird management.



**OBJECTIVE #5.**  
**PROVIDE HABITAT TO AC-**  
**COMMODATE MIGRATING**  
**AN/OR NESTING MIGRA-**  
**TORY BIRDS**

**- PASSERINE SPECIES**  
**(LOW PRIORITY)**

## Marsh Nesting Species

### *Current Status:*

Several species of songbirds and water dependent birds nest in Refuge wetlands, including those in the impoundments. Examples are marsh wrens and rails. This group has habitat requirements that are common on the Refuge. Their habitat needs will be enhanced following impoundment rehabilitation.

### *Proposed Actions:*

The Refuge biologist will consider incidental management techniques that can benefit marsh nesting birds as impoundment management programs are developed.

Volunteers often express interest in working with these species. Their assistance will be sought.

### *Program Needs:*

No additional staff or equipment is needed to implement these actions.

## State-listed Species

### *Current Status:*

Several species that are listed as important by the State of Virginia, but are not federally listed as threatened or endangered, use Refuge habitat. The glass lizard, for example, is a state listed reptile that has no special Federal designation. The Refuge maintains an awareness of use by these species but does not conduct specific management programs for them.

### *Proposed Actions:*

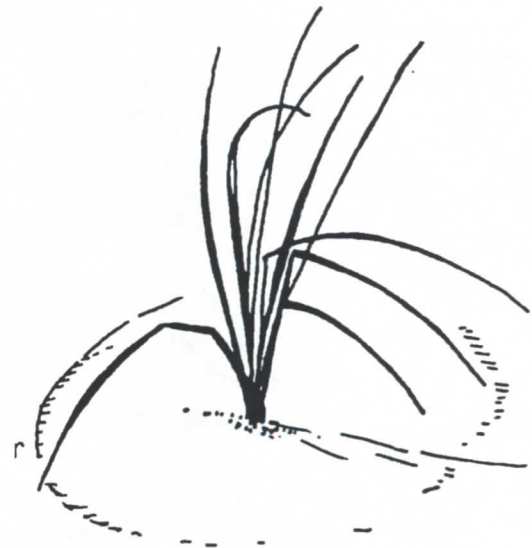
No management actions specific to State listed species are proposed. Management programs such as water management in rehabilitated impoundment and use of newly acquired land on the west side of Back Bay will be evaluated in relation to these species. The Virginia Division of Natural Heritage and/or the Virginia Department of Game and Inland Fisheries will be notified of



#### **OBJECTIVE #5.**

**PROVIDE HABITAT TO ACCOMMODATE MIGRATING AN/OR NESTING MIGRATORY BIRDS**

**- MARSH NESTING SPECIES  
(LOW PRIORITY)**



#### **OBJECTIVE #6.**

**PROVIDE HABITAT FOR PLANT AND ANIMAL SPECIES LISTED BY THE STATE OF VIRGINIA AS RARE, THREATENED, OR ENDANGERED  
(MEDIUM PRIORITY)**



the results of these evaluations and consulted regarding various management techniques and scenarios. The recently completed (1993) Natural Heritage Inventory of Virginia Beach will be consulted prior to making management decisions on newly acquired lands.

***Program Needs:***

No additional staff or equipment will be required to monitor State listed species use of the Refuge. Coordination with State biologists will increase.

**Deer**

***Current Status:***

The Refuge has an increasingly healthy deer herd which is kept in balance with available habitat through a long established public hunting program.

Water levels in impoundments are occasionally manipulated to accommodate hunter access to some parts of the Refuge.

As additional lands are acquired, deer management will become necessary.

***Proposed Actions:***

The hunt will continue at its current level unless a significant rise or fall is noted. In either case the hunt plan/program will be amended.

Following impoundment rehabilitation water levels will not be altered to accommodate hunters unless it is consistent with waterfowl and shorebird habitat management.

If necessary, the hunt program will be expanded to include additional land as it is acquired on the west side of Back Bay. The Virginia Department of Game and Inland Fisheries will be consulted regarding deer management on newly acquired lands.



**OBJECTIVE #7.  
MANAGE REFUGE DEER  
HERD TO MAINTAIN HEALTH  
OF HERD AND LIMIT  
OVERBROWSING  
(HIGH PRIORITY)**

### ***Program Needs:***

No additional staff or equipment will be required to manage the hunt program at this time.

## **Exotic/Feral Species Management**

### **Phragmites**

#### ***Current Status:***

The exotic plant phragmites constantly encroaches into Refuge wetlands. Management to prevent its spread to additional parts of the Refuge includes the use of the herbicide Rodeo and controlled burning.

#### ***Proposed Actions:***

Phragmites will be removed from at least 100 acres of Refuge wetlands annually. This number will increase as additional phragmites infested habitat is acquired on the west side of Back Bay. The Refuge will initiate cooperative efforts with other landowners and government agencies to increase awareness of the phragmites problem, control the plant on additional acres, and evaluate the effectiveness and impacts of the control effort.

#### ***Program Needs:***

The current staff can effectively treat the 100 acres annually. As the amount of phragmites dominated habitat increases with acquisition of new lands, additional funds for contract spraying and purchase of Rodeo will be required to control the spread of this plant.

### **Feral Horses**

#### ***Current Status:***

Feral horses have been observed on the Refuge since at least the late 1960's. In 1991, 16 of the 19 horses then using the Refuge were removed after being trapped in



#### ***OBJECTIVE #8.***

**REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PROLIFERATION OF PHRAGMITES (HIGH PRIORITY)**

the maintenance compound. In 1992 the three remaining horses were removed. These were sold and/or donated according to Federal regulations. Feral horses directly compete with migratory birds and indigenous resident species for food and have conflicted with endangered species (loggerhead sea turtle) management in the past.

***Proposed Actions:***

The Refuge Manager will continue to work with interested parties to insure that trespass horses are removed from the Refuge humanely and placed in ownerships where they will be properly cared for. Coordination with State officials will continue to insure that all reasonable steps are taken to reduce the potential for immigration of other feral horses from the south. This may include construction of fences, cattle guards, or other barriers. If barriers fail, capture and relocation may again be necessary.

**OBJECTIVE # 9.**

**ELIMINATE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, ENDANGERED SPECIES, AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PRESENCE OF FERAL HORSES  
(HIGH PRIORITY)**

***Program Needs:***

Feral horse management caused the unexpected expenditure of over \$12,000 in FY 92 and FY 93, not including staff time. Fencing or other construction will require additional funding; a cooperative agreement or memorandum of understanding with the State may be necessary to permit a joint funding/management effort.

**Feral Hogs**

***Current Status:***

Feral hogs have been present on the Refuge probably since its establishment in 1938. Control activities have occurred for at least the past three decades. Feral hogs compete with indigenous species for food, damage dikes, and alter habitat. Taking of hogs is permitted during the Refuge deer hunt and they are occasionally removed by Refuge staff in accordance with the 1991 Interim Animal Control Plan.



***Proposed Actions:***

A research study should be developed that will assess the damage done by feral hogs and document habitat changes caused by rooting. If possible, research will be conducted by a college student. In the interim, removal of hogs will continue by present means.

***Program Needs:***

No additional staffing or funding will be needed to accomplish this project.

**Nutria**

***Current Status:***

Nutria began proliferating in the area of the Refuge in the late 1950's and early 60's. Control was begun soon after as dike damage accompanied the increase in population. Nutria undermine dikes by burrowing and have displaced virtually all native muskrats on the barrier spit portion of the Refuge. The decline in public trapping interest has resulted in a cancellation of the Refuge trapping program for the past three years (1989-92). Nutria are taken occasionally by staff in accordance with the Interim Animal Control Plan of 1991.

***Proposed Actions:***

As part of the impoundment rehabilitation project, all dike side slopes are being re-shaped to a minimum 3:1 grade. This will discourage nutria from burrowing activities. Trapping may again be employed if public interest is rekindled. If nutria damage increases significantly, USDA Animal Damage Control will be consulted for recommendations. Nutria will continue to be removed by Refuge staff in accordance with the Interim Animal Control Plan.

**OBJECTIVE # 10.**  
**REDUCE THE NEGATIVE IM-**  
**PACTS TO MIGRATORY BIRDS,**  
**ENDANGERED SPECIES, INDIG-**  
**ENOUS RESIDENT SPECIES, AND**  
**REFUGE FACILITIES CAUSED BY**  
**THE PRESENCE OF FERAL HOGS**  
**(MEDIUM PRIORITY)**

**OBJECTIVE # 11.**  
**REDUCE THE NEGATIVE**  
**IMPACTS TO MIGRATORY**  
**BIRDS, INDIGENOUS RESI-**  
**DENT SPECIES, AND REFUGE**  
**FACILITIES CAUSED BY**  
**THE PRESENCE OF NUTRIA**  
**(MEDIUM PRIORITY)**

### ***Program Needs:***

No additional staff or funding is required at this time. If nutria damage increases significantly, additional funds may be necessary to "cost share" a removal program with Animal Damage Control.

### **Public Use Management**

#### ***Current Status:***

Back Bay Refuge has one supervisory outdoor recreation planner, two public use specialists (Refuge Rangers), a small visitor contact station at the headquarters building, an outdoor classroom and literature to guide and inform visitors. Much of the Refuge beach and dikes are accessible to foot and bike traffic.

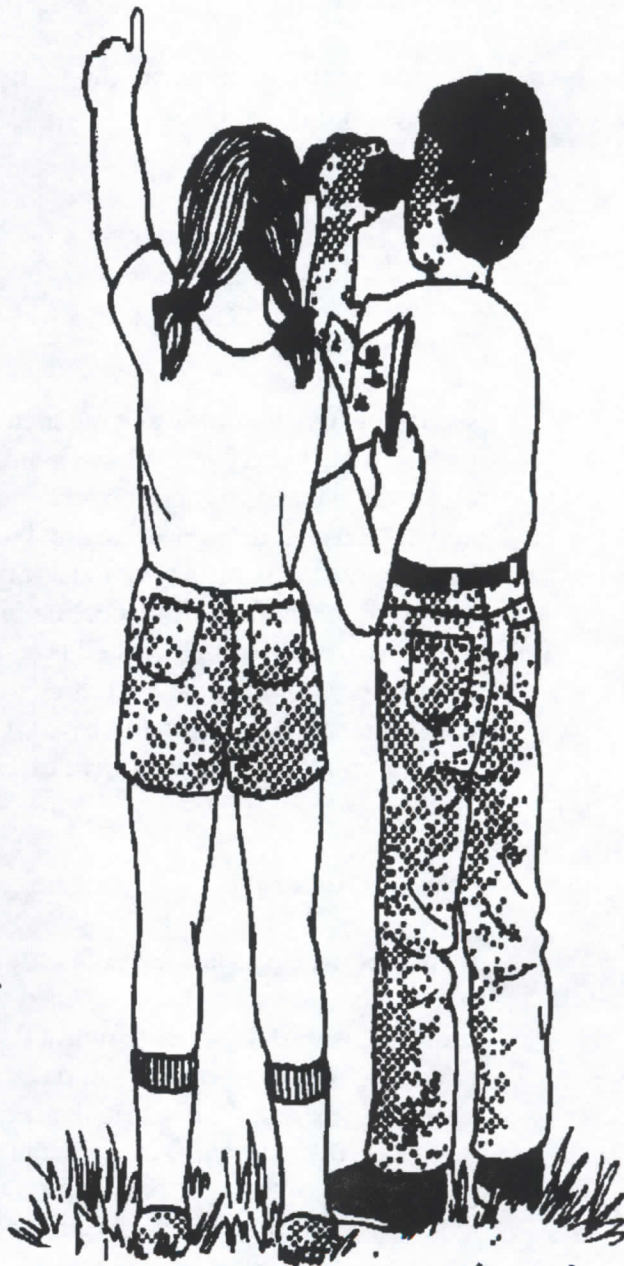
The public use program has been active with area schools and civic groups both on and off the Refuge and has successfully worked with volunteers to accomplish many activities. The entire public use program was reviewed and updated in FY-90 through development of a new public use management plan.

In addition to addressing all public use objectives that are common to all Region 5 Refuges, the Back Bay plan highlights a need to establish and enforce visitor carrying capacities on the Refuge beach and on the dikes that are being rehabilitated. These are the Refuge's most important wildlife areas that are accessible to visitors and they are the most popular walking areas for visitors. This combination creates visitor/wildlife conflicts, especially during bird nesting and migration seasons.

The Refuge allows motor vehicle access across the beach to 26 special use permit holders who are allowed access to their private beach property that is south of the Refuge. This creates the unique problem of assuring that only permittees drive on the beach and that permittees comply with the conditions of their permits.

Other highlights of public use management include  
1) projecting carrying capacity concerns assuming the number of headquarters parking spaces ~~is~~ increased

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from 48 to 100, and 2) converting all visitor facilities on the barrier spit portion of the Refuge to self-service mode.

***Proposed Actions:***

The 1990 public use plan will continue to be implemented. Items in the plan that require additional funding will be implemented as funds become available.

New studies will be done to determine carrying capacities for foot and bicycle traffic on the rehabilitated dikes. Limits will be established to minimize seasonal conflicts between visitors and wildlife. Part of this study will be to project increased visitation and its impact on wildlife if the number of headquarters parking spaces is doubled.

Work will continue on the conversion of visitor facilities to self-service operation.

Teacher workshops to expand fish and wildlife education programs in area schools will continue to be a high priority

An amendment to the public use management plan will be developed for the use of newly acquired lands.

***Program Needs:***

Costs to implement specific actions identified in the public use plan will be funded annually in accordance with Regional budget priorities or through alternative funding sources obtained by the Refuge.

The various carrying capacity projections will be developed by the Refuge outdoor recreation planner using assistance from other Region 5 ORPs and experts from other agencies.

**OBJECTIVES #12-20  
REFER TO PUBLIC USE MAN-  
AGEMENT. SEE APPENDIX 1  
FOR A LIST OF OBJECTIVES.**



## Habitat Acquisition, Protection, and Management

### Land Acquisition

#### ***Current Status:***

Prior to 1989, there had been no land acquisition activity since the Refuge was established in 1938. In 1990, the Refuge acquisition boundary was increased by 6340 acres. The area includes wetland and upland habitat on the north and west sides of Back Bay. This was a major advancement for the Refuge and has the potential to more than double the original acreage and greatly increase the complexity of management responsibilities. Acquisition resumed in 1990 and is ongoing.

#### ***Proposed Actions:***

The Refuge staff will continue to support the Office of Realty as it negotiates the purchase of additional land.

The Refuge has already reacted to situations brought on by acquisition of additional lands. Boundary posting, wildfire control agreements, public inquiries concerning Service ownership, and public perceptions of the Service are matters that cannot wait until additional staff are available.

The Refuge manager will develop a strategy for responding to immediate concerns related to management of newly acquired land. It will contain the message that will be conveyed to the public, especially to people directly affected by this transfer of land ownership. It will also anticipate the most pressing needs related to land acquisition and project funds and personnel needed to implement appropriate actions.

#### ***Program Needs:***

There is an immediate need for Refuge staff to assume planning and management responsibility for the "west side". Basic needs include additional office space, vehicles, field equipment, computers, and field personnel (Bio Tech/Maintenance Worker).

**OBJECTIVE #21.**  
**CONTINUE TO ACQUIRE HABITAT WITHIN THE REFUGE ACQUISITION BOUNDARY**  
**(HIGH PRIORITY)**

Following establishment of these basics, further needs will be identified through preparation of Individual Project Worksheets that will outline longer-term management of added lands.

### **Off-Refuge Habitat Protection**

#### ***Current Status:***

Back Bay Refuge has always been concerned about off-refuge land uses and their impact on the quality of Back Bay. Involvement in related issues has increased dramatically because the Refuge has become an abutter to projects that alter land use, and due to the decline in water quality of Back Bay itself.

#### ***Proposed Actions:***

Concerns over land use changes in the Back Bay watershed now require direct involvement because the Refuge is an abutter to these sources of environmental impact and no other agency has stepped forward to respond to wildlife needs. This has increased the demand for Refuge personnel to interact with citizen groups and agencies who influence and decide how the Bay watershed is, or is not, developed. Direct involvement is called for in such matters as planning for the Ferrell Parkway, location of residential and commercial developments and agricultural activities.

#### ***Program Needs:***

Immediate and continual involvement by the Refuge Manager is needed to assure that decisions made that influence the ecological condition of the Back Bay watershed fully account for the impacts to fish and wildlife.

### **New Acquisition Management**

#### ***Current Status:***

Acquisition of up to 6340 acres of wildlife habitat has begun on the west side of Back Bay.

**OBJECTIVE #22.  
INFLUENCE OFF-REFUGE LAND  
USE DECISION MAKING IN  
WAYS THAT RESTORE, MAIN-  
TAIN OR ENHANCE BACK BAY/  
NORTH LANDING RIVER WA-  
TER QUALITY  
(MEDIUM PRIORITY)**





Little information has been assembled that can be used to plan for the long-term management of this area.

***Proposed Actions:***

A habitat type map will be prepared for all land currently within the Refuge boundary. It will include the barrier spit and the expansion area.

The Refuge wildlife inventory plan will be revised to include wildlife inventory procedures for all lands in the acquisition boundary, including the 6340 acres on the west side of Back Bay.

The potential for developing public use programs for the expansion area will be developed. This will include an assessment of current traditional uses.

Information that evolves from the tasks listed above will be analyzed to develop a general management focus for new acquisitions. Based on this focus specific management plans or plan amendments will be developed and implemented.

***Program Needs:***

Existing staff will begin developing a west side management focus. As active management increases, additional field personnel may be necessary to accomplish high priority tasks.

**Fire Management**

***Current Status:***

The Refuge has no formal fire fighting agreement with the City of Virginia Beach for controlling wildfire on the barrier spit. In a 1991 meeting with the Deputy Manager, the Virginia Beach Fire Chief indicated no need to pursue a formal agreement and the Department would continue to respond to fire occurrences on Refuge lands.

The Regional Fire Management Coordinator (RFMC) has developed a fire management agreement with the State of Virginia that will affect all of Back Bay Refuge.

**OBJECTIVE #23.**  
**DEVELOP A MANAGEMENT**  
**OVERVIEW TO GUIDE INITIAL**  
**MANAGEMENT OF LAND THAT**  
**HAS BEEN, AND WILL CON-**  
**TINUE TO BE, ACQUIRED ON**  
**THE "WEST SIDE" OF THE**  
**REFUGE**  
**(HIGH PRIORITY)**

***Proposed Actions:***

The Refuge will participate in implementation of the State agreement being coordinated by the RFMC and determine the need for local agreements.

***Program Needs:***

No additional staff or funds are needed to establish and adhere to fire control agreements. Seasonal fire crews may be necessary for presuppression and suppression activities during the summer months

**OBJECTIVE #24.  
COMPLY WITH REGIONAL FIRE  
MANAGEMENT  
COORDINATOR'S GUIDANCE  
(HIGH PRIORITY)**

**Cultural Resource Management**

***Current Status:***

Few historic or archaeological sites exist on the barrier spit and those that do are well protected. The Refuge, therefore has not had a need to become heavily involved in managing such resources.

One historic site, the Whitehurst House, and at least two cemeteries, were acquired during 1990-92. Additional historic or archaeological sites will probably be acquired as land acquisition progresses.

***Proposed Actions:***

The Refuge Manager will coordinate with the Regional Historic Preservation Officer and the Virginia Beach/Princess Anne Historical Society during future land acquisitions to assure that historical and archaeological resources on Service lands are properly managed.

**OBJECTIVE #25.  
COMPLY WITH HISTORIC/  
ARCHAEOLOGICAL RE-  
SOURCE PROTECTION LAWS  
AND REGULATIONS  
(MEDIUM PRIORITY)**

***Program Needs:***

No additional staff or funds are needed to identify historical or archaeological resources. Specific funds will be requested when the Service acquires such resources in conjunction with habitat acquisitions.

## Plum Tree Island Management

### *Current Status:*

A management plan has not been developed for Plum Tree Island Refuge because sufficient staff is not available to develop or implement such a plan.

Current management consists of occasional visits to the Refuge to conduct routine tasks such as boundary posting, law enforcement, wildlife inventory, and basic interaction with members of Poquoson, VA and adjacent communities.

A draft Environmental Assessment has been released that examines alternative land acquisition scenarios for the area adjacent to Plum Tree Island NWR.

### *Proposed Actions:*

An assistant refuge manager should be assigned to Plum Tree Island to assess the area's wildlife management potential and develop a management program to benefit those resources.

### *Program Needs:*

An assistant refuge manager will need to be hired and provided support such as office space, motor vehicle, boat, and sampling equipment.

## Administration

### Safety

### *Current Status:*

The safety and health of Refuge users and staff are always a high priority on all Region Five Refuges. Safety hazards are routinely noted and corrected when found.

**OBJECTIVE #26.**  
**DETERMINE THE FUTURE**  
**MANAGEMENT DIRECTION**  
**OF PLUM TREE ISLAND**  
**REFUGE**  
**(HIGH PRIORITY)**

***Proposed Actions:***

Ongoing safety training and inspections will continue.

The boat ramp and dock present potential safety problems. The boat ramp will be relocated to a safer location and the dock will be retrofitted for public use or demolished.

***Program Needs:***

Funds will be needed to relocate the boat ramp and retrofit or demolish the dock.

**Operations - Headquarters/Visitor Center**

***Current Status:***

The current headquarters building serves as Refuge office and visitor center. It does not adequately accommodate the current staff and is not equipped to maximize efficiency of operations.

***Proposed Actions:***

An alternative concept will be developed for providing visitor contact at a location other than in the headquarters building. Following this action a new floor plan for office functions will be applied to the entire headquarters building to alleviate current crowding and inefficiencies.

***Program Needs:***

Design assistance will be required to develop an alternative concept for accommodating visitors. This will be coordinated by the Refuge ORP with technical assistance from the Regional landscape architect. The services of a design contractor may also be needed.

The Refuge Manager may seek the services of an office design consultant to revamp the office layout.

Funds for both projects will be sought following completion of designs.

**OBJECTIVE #27.  
ENSURE THE HEALTH AND  
SAFETY OF ALL REFUGE US-  
ERS, INCLUDING STAFF  
(HIGH PRIORITY)**

**OBJECTIVE #28.  
DEVELOP THE OPERATIONS  
CAPABILITY TO ACCOMPLISH  
THE OBJECTIVES OF THIS  
PLAN, SPECIFICALLY AD-  
DRESSING THE FOLLOWING  
TOPICS  
(ALL HIGH PRIORITY):**

**-HEADQUARTERS/VISITOR  
CENTER**



**Operations - Upgrade Office  
Functions and Headquarters  
Efficiency**

***Current Status:***

Office efficiency suffers because the staff is crowded into less than adequate space. Disruptive pedestrian traffic and excessive noise occurs when staff members conduct business in the open area of the office. Efficiency is also hampered by a phone system that does not accommodate the entire staff and by the fact that some aspects of business have not been computerized.

***Proposed Actions:***

A new phone system will be designed and installed and a computer system will be designed and installed in the office. This work will not be contingent on rebuilding the office space; it will proceed independently.

**Program Needs:**

Funds to hire the services of telephone and computer systems consultants will be sought.

**OBJECTIVE #28.  
DEVELOP THE OPERATIONS  
CAPABILITY TO ACCOMPLISH  
THE OBJECTIVES OF THIS PLAN,  
SPECIFICALLY ADDRESSING  
THE FOLLOWING TOPICS  
(ALL HIGH PRIORITY):**

**-UPGRADE OF OFFICE FUNC-  
TIONS AND HEADQUARTERS  
EFFICIENCY**

**Operations - Increase Refuge Staffing**

***Current Status:***

The current staff cannot keep pace with needs identified in this plan. Additional staff will be needed to manage biological data gathering, storage and analysis; rehabilitated dikes and impoundments; newly acquired lands and Plum Tree Island Refuge.

***Proposed Actions:***

The following positions should be added to the Refuge staff:

- One assistant refuge manager or biological technician for Plum Tree Island Refuge
- One PFT Maintenance Worker
- One Biological Technician

**OBJECTIVE #28.  
DEVELOP THE OPERATIONS  
CAPABILITY TO ACCOMPLISH  
THE OBJECTIVES OF THIS PLAN,  
SPECIFICALLY ADDRESSING  
THE FOLLOWING TOPICS  
(ALL HIGH PRIORITY):**

**-INCREASE IN REFUGE STAFF-  
ING**

***Program Needs:***

Approximately \$95,000 and three FTE's will need to be added to the Refuge's annual budget to hire and support these positions.

**Operations - Upgrade Maintenance Management Capability**

***Current Status:***

Maintenance buildings and related facilities are fairly well suited for current needs. However, increased maintenance capabilities will be needed for the improved dike system and for new land being acquired.

***Proposed Actions:***

The existing maintenance shop and equipment will be upgraded and one PFT maintenance worker will be added to the staff. Major equipment purchases will include:

- One 4 wheel drive tractor
- One 12 foot mower
- One bulldozer
- Vehicle lift/shop improvements

***Program Needs:***

The Refuge Manager will prepare justification and funding proposals for needed equipment and for hiring an additional maintenance worker.



**OBJECTIVE #28.**  
**DEVELOP THE OPERATIONS CAPABILITY TO ACCOMPLISH THE OBJECTIVES OF THIS PLAN, SPECIFICALLY ADDRESSING THE FOLLOWING TOPICS (ALL HIGH PRIORITY):**  
**-UPGRADE OF MAINTENANCE MANAGEMENT CAPABILITY**

**Operations - Coordination/Cooperation with Other Agencies and Organizations**

***Current Status:***

Interaction with agencies, groups and elected officials relative to management of Refuge beach, dune, wetlands and open water areas is well established. Contact and interaction with agencies and groups having interest in lands currently being acquired needs to be expanded.



***Proposed Actions:***

A general strategy for management of newly acquired lands will be developed by the Refuge during FY-94. It will identify groups and agencies concerned with that area and it will propose staffing needs for management of these new lands.

***Program Needs:***

Additional staff time will be needed to establish and maintain coordination relative to new acquisitions.

**OBJECTIVE #28.**  
**DEVELOP THE OPERATIONS CAPABILITY TO ACCOMPLISH THE OBJECTIVES OF THIS PLAN, SPECIFICALLY ADDRESSING THE FOLLOWING TOPICS (ALL HIGH PRIORITY):**  
**-COORDINATION/COOPERATION WITH OTHER AGENCIES AND ORGANIZATIONS**

**Operations - Motor Vehicle Access Permit Program**

***Current Status:***

Special use permits are issued to 26 individuals for the use of motor vehicles to cross the Refuge beach or dikes to gain access to their property in North Carolina.

***Proposed Actions:***

Permits will not be renewed for individuals who do not meet the Service's strict motor vehicle access requirements. Compliance will be closely monitored and an upgraded beach access gate will be installed in FY 94. Eventually all permits are expected to become obsolete through attrition. A motor vehicle access management plan will be prepared to ensure consistent program management.

***Program Needs:***

Permit monitoring and issuance will be managed by current staff. Funding will be sought for a new beach access gate and east dike gate.

**OBJECTIVE #28.**  
**DEVELOP THE OPERATIONS CAPABILITY TO ACCOMPLISH THE OBJECTIVES OF THIS PLAN, SPECIFICALLY ADDRESSING THE FOLLOWING TOPICS (ALL HIGH PRIORITY):**  
**-MOTOR VEHICLE ACCESS PERMIT PROGRAM**

## MANAGEMENT STRATEGIES

This section lists strategies to achieve the Back Bay Refuge objectives. Strategies are correlated with the objectives and proposed actions outlined in the preceding pages. The first digit of each strategy corresponds to the objective number.

### **OBJECTIVE #1: DEVELOP AND OPERATE AN EFFECTIVE WILDLIFE/HABITAT DATA MANAGEMENT SYSTEM FOR BACK BAY AND PLUM TREE ISLAND REFUGES (HIGH PRIORITY)**

#### **STRATEGIES:**

- 1a. Build a Refuge Geographical Information System (GIS) compatible with the system used by the Virginia Field Office - Ecological Services and Great Dismal Swamp NWR.
- 1b. Inventory all habitat types and locations within the Refuge boundaries and record this information in the GIS mentioned above.
- 1c. Implement the May 1989 Refuge Wildlife Inventory Plan.
- 1d. Update the Refuge Wildlife Inventory Plan to be consistent with RMIS, as revised.
- 1e. Develop and implement management studies to produce information to enhance the effectiveness of wildlife and habitat management decision making.

### **OBJECTIVE #2. PROTECT MIGRATION AND NESTING HABITAT FOR PIPING PLOVERS, AND IF NESTING OCCURS, FLEDGE 2.0 CHICKS PER ACTIVE NEST (HIGH PRIORITY)**

#### **STRATEGIES:**

- 2a. Monitor the Refuge beach to establish plover use chronology and long-term trends. (Coordinate monitoring with Zone Biologist/ Regional Endangered Species Coordinator/State Nongame Program)
- 2b. Survey the Refuge beach during early nesting season to locate territorial pairs and active nests.
- 2c. Protect active nests in compliance with Endangered Species Coordinator guidance.
- 2d. Participate in the winter plover survey coordinated by the VA Dept. of Game and Inland Fisheries.

**OBJECTIVE #3.      SUCCESSFULLY HATCH 90% OF THE LOGGERHEAD SEA  
TURTLE EGGS THAT ARE LAID ON, OR TRANSPLANTED TO,  
THE REFUGE (*HIGH PRIORITY*)**

**STRATEGIES:**

- 3a.    Survey beaches during turtle nesting seasons to locate nests.
- 3b.    Relocate nests susceptible to washout or motor vehicles to higher beach and protect them from predation and public disturbance.
- 3c.    Protect "safe" nests from predation and public disturbance.
- 3d.    Monitor nest hatching success.
- 3e.    Continue coordination with the Virginia Institute of Marine Science through the turtle "head start" program.
- 3f.    Record data on dead turtles found on the Refuge beach and report results to the Turtle Stranding Network.
- 3g.    Expand nest survey area, through cooperation with other agencies, to include beaches from Cape Henry to the VA/NC line.

**OBJECTIVE #4.      PROVIDE SUFFICIENT HABITAT TO MAINTAIN HEALTHY  
WINTERING POPULATIONS OF:**

**STRATEGIES:**

**-      DABBLING DUCKS            (*HIGH PRIORITY*)**

- 4a.    Manage approximately 60% of impounded wetland as wintering dabbling duck habitat; percentage will be refined over time. (Incidental benefits to snow geese)

**-      CANADA GOOSE            (*HIGH PRIORITY*)**

- 4b.    Manage the majority of Refuge croplands, as they are acquired, to produce crops that benefit wintering Canada geese. (This action will also benefit snow geese)

**-      SNOW GOOSE            (*MEDIUM PRIORITY*)**

- 4c.    Burn 25% of Refuge marshes each year during winter.
- 4d.    Convert 50 acres of cropland on Long Island to a perennial forage crop.

**OBJECTIVE #5. PROVIDE HABITAT TO ACCOMMODATE MIGRATING AND/OR NESTING MIGRATORY BIRDS:**

**STRATEGIES:**

**- SHORE BIRDS/WADING BIRDS (HIGH PRIORITY)**

- 5a. Manage approximately 40% of impounded wetlands as habitat to accommodate migrating shore and wading birds; percentage will be refined over time.
- 5b. Request advice from Fishery Assistance on managing impoundments for forage fish to enhance the quality of shore and wading birds food sources.
- 5c. Implement actions that prevent conflicts between visitors and shore birds on the Refuge beach and impoundments.

**- RAPTOR SPECIES (LOW PRIORITY)**

- 5d. Manage a portion of Refuge croplands to increase populations of forage species to benefit migrating and wintering raptors.
- 5e. Establish a barn owl/kestrel nesting program by installing nest boxes in appropriate habitat.

**- WOODCOCK (LOW PRIORITY)**

- 5f. Determine the woodcock management potential on land within the acquisition boundary.
- 5g. Evaluate woodcock nesting through the 1994 nesting season.
- 5h. Determine management action based on habitat and nesting evaluation.

**- PASSERINE SPECIES (LOW PRIORITY)**

- 5i. Create and maintain corridors of diverse shrub, forest and field habitat types along the east and west sides of Refuge impoundments and on the "west side" of the Refuge.

**- MARSH NESTING SPECIES (LOW PRIORITY)**

- 5j. Create and maintain nesting habitat for sedge wren, least bittern, rails, and other marsh nesting birds.

**OBJECTIVE #6. PROVIDE HABITAT FOR PLANT AND ANIMAL SPECIES LISTED BY THE STATE OF VIRGINIA AS RARE, THREATENED, OR ENDANGERED (HIGH PRIORITY)**

**STRATEGY:**

- 6a. Evaluate Refuge management actions in relation to impacts on flora and fauna that are listed as rare by the VA Division of Natural Heritage and /or Game and Inland Fisheries.
- 6b. Acquire lands in Heritage Natural Areas that are within the approved boundary.

**OBJECTIVE #7. MANAGE REFUGE DEER HERD TO MAINTAIN HEALTH OF HERD AND LIMIT OVERBROWSING (HIGH PRIORITY)**

**STRATEGY:**

- 7a. Continue deer removal in accordance with the Refuge Hunt Plan. (Discontinue the practice of manipulating impoundment water levels to accommodate hunters.)
- 7b. Open newly acquired lands to deer hunting in 1994.

**OBJECTIVE #8. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PROLIFERATION OF PHRAGMITES (HIGH PRIORITY)**

**STRATEGIES:**

- 8a. Remove phragmites from a minimum of 100 acres of wetland annually.
- 8b. Monitor the effectiveness of phragmites control on the Refuge.

**OBJECTIVE #9. ELIMINATE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, ENDANGERED SPECIES, AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PRESENCE OF FERAL HORSES (HIGH PRIORITY)**

**STRATEGY:**

- 9a. Work with interested parties to ensure that horse removal is conducted humanely and expeditiously.

**OBJECTIVE #10. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, ENDANGERED SPECIES, INDIGENOUS RESIDENT SPECIES, AND REFUGE FACILITIES CAUSED BY THE PRESENCE OF FERAL HOGS (MEDIUM PRIORITY)**



**STRATEGIES:**

- 10a. Determine the ecological impact to habitats frequently disturbed by hogs.
- 10b. Continue hog removal in accordance with the Refuge Hunt Plan and January 1991 Interim Animal Control Plan.

**OBJECTIVE #11. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, INDIGENOUS RESIDENT SPECIES, AND REFUGE FACILITIES CAUSED BY THE PRESENCE OF NUTRIA (MEDIUM PRIORITY)**

**STRATEGY:**

- 11a. Continue nutria removal in accordance with the Refuge Trapping Plan and January 1991 Interim Animal Control Plan.

**NOTE:** With the exception of those listed below, strategies for objectives #12-#20 were developed during preparation of the Refuge Public Use Management Plan and are listed in Appendix 2. With the exception of objective #12, these objectives have all been assigned a medium priority.

**OBJECTIVE #12. ASSURE THAT PUBLIC USE ACTIVITIES AND FACILITIES ARE COMPATIBLE WITH REFUGE PURPOSES AND CONSISTENT WITH STATION MANAGEMENT OBJECTIVES; DEVELOP AND IMPLEMENT STRATEGIES TO ELIMINATE NON-COMPATIBLE SITUATIONS (HIGH PRIORITY)**

**OBJECTIVE #13. ASSESS THE NEED FOR AND, WHERE NECESSARY, DEVELOP AND ADHERE TO VISITOR CARRYING CAPACITIES**

**STRATEGIES:**

- 13a. Determine and enforce the visitor carrying capacity of Refuge beach and dikes.
- 13b. Eliminate conflict between visitors using the beach and shorebirds.
- 13c. Project carrying capacities for refuge facilities assuming headquarters parking spaces are increased from 48 to 100.

- OBJECTIVE #14. PROVIDE OUTDOOR CLASSROOMS FOR EDUCATIONAL INSTITUTIONS INVOLVED IN ENVIRONMENTAL EDUCATION; EMPHASIZE WILDLIFE AND HABITAT MANAGEMENT**
- OBJECTIVE #15. CONVEY THE REFUGE "STATION MESSAGE" (8RM 1.4 [R-5:007] TO VISITORS AND OFF-REFUGE GROUPS AND INDIVIDUALS**
- OBJECTIVE #16. CONVEY TO ALL VISITORS THAT REFUGES ARE PRIMARILY FOR WILDLIFE AND THAT PUBLIC USE MAY BE RESTRICTED ON SOME PARTS OF THE REFUGE**
- OBJECTIVE #17. ORIENT, INFORM AND GUIDE REFUGE VISITORS WITH HIGH QUALITY SIGNS AND LITERATURE THAT CONVEY CURRENT INFORMATION ON HOURS OF OPERATION, REGULATIONS, PROGRAMS, FACILITIES AND ACTIVITIES**

**STRATEGY:**

- 17a. Continue the ongoing movement toward converting visitor facilities on the Barrier Spit to a self-service operation.

- OBJECTIVE #18. PROVIDE VISITOR SITES AND FACILITIES THAT ARE NECESSARY, EFFICIENT, SAFE, WELCOMING AND VISUALLY ATTRACTIVE**
- OBJECTIVE #19. INFORM LOCAL RESIDENTS AND GROUPS ABOUT REFUGE MANAGEMENT ISSUES THAT AFFECT THEM**
- OBJECTIVE #20. GENERATE AND MAINTAIN A NETWORK OF COMMUNITY MEMBERS WHO ACTIVELY SUPPORT REFUGE MANAGEMENT ACTIONS**
- OBJECTIVE #21. CONTINUE TO ACQUIRE HABITAT WITHIN THE REFUGE ACQUISITION BOUNDARY (HIGH PRIORITY)**

**STRATEGIES:**

- 21a. Cooperate with the Office of Realty to expedite acquisition of additional land within the acquisition boundary.
- 21b. Expand public information efforts that explain the land acquisition program.

**OBJECTIVE #22. INFLUENCE OFF-REFUGE LAND USE DECISION MAKING IN WAYS THAT RESTORE, MAINTAIN OR ENHANCE BACK BAY/ NORTH LANDING RIVER WATER QUALITY (MEDIUM PRIORITY) STRATEGIES:**

- 22a. Develop and participate with citizen and agency groups concerned about situations that adversely impact, or benefit, the natural resources of the Back Bay watershed. Known situations include: construction of Ferrell Parkway, potential sewer extensions, decline of Back Bay water quality, watershed development and agricultural activities. (Action taken by the Refuge will be coordinated with the Ecological Services Virginia Field Office).
- 22b. Maintain awareness of off-Refuge situations that do, or could, impact Refuge resources or programs
- 22c. Encourage private landowners to control the spread of phragmites on their land.

**OBJECTIVE #23. DEVELOP A MANAGEMENT OVERVIEW TO GUIDE INITIAL MANAGEMENT OF LAND THAT HAS BEEN, AND WILL CONTINUE TO BE, ACQUIRED ON THE "WEST SIDE" OF THE REFUGE (HIGH PRIORITY)**

**STRATEGIES:**

- 23a. Prepare a habitat cover map of all land within the Refuge boundary, including the barrier spit.
- 23b. Update the Wildlife Inventory Plan to include procedures for all lands within the Refuge boundary.
- 23c. Complete a general assessment of the potential for public use management opportunities and conflicts within the Refuge west side boundary.
- 23d. Analyze the habitat, wildlife and public use information (above) to establish a general management focus for the Refuge's west side. Emphasize high priority species (and groups of species) and actions that will contribute to restoration and protection of Back Bay water quality.
- 23e. Prepare/revise appropriate management plans to reflect the general management direction that evolves for the expansion area.

**OBJECTIVE #24. COMPLY WITH REGIONAL FIRE MANAGEMENT COORDINATOR'S GUIDANCE (HIGH PRIORITY)**

**STRATEGIES:**

- 24a. Develop interim fire protection strategies for newly acquired lands within 30 days of individual tract acquisition.
- 24b. Correct immediate fire hazards within 60 days of individual tract acquisition.
- 24c. Solidify and maintain fire protection agreements with the VA Beach fire chief.

**OBJECTIVE #25. COMPLY WITH HISTORIC/ARCHAEOLOGICAL RESOURCE PROTECTION LAWS AND REGULATIONS (MEDIUM PRIORITY)**

**STRATEGIES:**

- 25a. Report any vandalism or looting of archaeological sites to the Regional Historic Preservation Officer (RHPO) and Regional law enforcement personnel in compliance with the Antiquities Act and Archaeological Resource Protection Act (ARPA).
- 25b. Initiate RHPO review of all non-federal ground disturbing activities on the Refuge in compliance with the permit provisions of the ARPA and the Antiquities Act.
- 25c. Participate in the archaeological resource management survey program being conducted at R-5 refuges in compliance with Sec. 110 of the National Historic Preservation Act (NHPA).
- 25d. Initiate RHPO review of any Service-proposed actions which could involve ground disturbance or impact upon historic architectural resources on the Refuge, in compliance with Sec. 106 of the NHPA.
- 25e. Determine the historic and archaeological value of sites on land proposed for acquisition.

**OBJECTIVE #26. DETERMINE THE FUTURE MANAGEMENT DIRECTION OF PLUM TREE ISLAND REFUGE (HIGH PRIORITY)**

**STRATEGIES:**

- 26a. Assign an Assistant Refuge Manager to Plum Tree Island NWR.

- 26b. Continue current management pending assignment of the assistant manager. Current management includes:
- Boundary Posting
  - Law Enforcement & Public Information Dissemination
  - Wildlife Inventory
  - Monitoring emergency fuel tank jettisons by the Air Force
  - Monitoring mosquito control
  - Interaction with the Community of Poquoson and adjacent municipalities
  - Work with Division of Realty, interested citizens, and conservation organizations to examine land acquisition needs and opportunities.

**OBJECTIVE #27. ENSURE THE HEALTH AND SAFETY OF ALL REFUGE USERS, INCLUDING STAFF (HIGH PRIORITY)**

**STRATEGIES:**

- 27a. Assess and remedy health and safety hazards that arise on the Refuge.
- 27b. Relocate the boat ramp that is adjacent to the boat dock.

**OBJECTIVE #28. DEVELOP THE OPERATIONS CAPABILITY TO ACCOMPLISH THE OBJECTIVES OF THIS PLAN, SPECIFICALLY ADDRESSING THE FOLLOWING TOPICS (ALL HIGH PRIORITY)**

**STRATEGIES:**

**- HEADQUARTERS/VISITOR CENTER**

- 28a. Develop a visitor center site and concept proposal.
- 28b. Convert the current visitor contact space to Refuge office space - following establishment of alternative visitor accommodation facilities.

**- UPGRADE OF OFFICE FUNCTIONS AND HEADQUARTERS EFFICIENCY**

- 28c. Computerize office functions and provide concurrent staff training.
- 28d. Redesign the office floor plan
- 28e. Acquire new and properly functioning office furniture.
- 28f. Install a new phone system that is adequate to accommodate the entire Refuge staff.

**- INCREASE IN REFUGE STAFFING**



- 28g. Develop and fill additional positions needed to accommodate increasing management responsibilities.
- One Assistant Refuge Manager/Biological Technician for Plum Tree Island NWR;
  - One Assistant Refuge Manager to assist with additional workload generated by land acquisition;
  - One Permanent-full-time Maintenance Worker;
  - One Biological Technician.

- **UPGRADE OF MAINTENANCE MANAGEMENT CAPABILITY**

28h. Upgrade existing maintenance shop.

28i. Purchase additional Maintenance equipment:

- 4 Wheel Drive Farm Tractor
- 12 foot Mower
- Bulldozer

28j. Implement the Maintenance Management System to include facility inspection, deficiency correction, preventative maintenance check list and an Individual Project Worksheet funding package.

- **COORDINATION/COOPERATION WITH OTHER AGENCIES AND ORGANIZATIONS**

28k. Maintain contact with Refuge neighbors, elected officials, and interested groups to assure they are adequately informed on Refuge issues and appropriate management decisions.

28l. Interact as a Refuge advocate with agencies whose activities influence the condition of the Refuge.

28m. Encourage farm groups to implement agricultural practices that minimize ecological impacts to Back Bay.

- **MOTOR VEHICLE ACCESS PERMIT PROGRAM**

28n. Prepare and implement a Motor Vehicle Access Permit Program Management Plan that includes strategies to:

- Computerize and analyze access data relative to monitoring permit compliance.
- Standardize administrative procedures of the program.

28o. Upgrade MVAPP facilities (beach and dike access gates).

## SUMMARY

Following are summary accounts of the current management, management prospects, management deficit (i.e. the difference between current management and management needed to achieve Refuge objectives), and a management strategy for reducing the deficit. These summaries were derived from previous sections of this document.

### A. Current Management

Collection, storage and use of wildlife population and habitat data is managed in accordance with the 1989 Refuge wildlife inventory plan that identifies Refuge specific procedures. These were developed by the Refuge because Regionally or Nationally consistent data collection and management standards, although being developed, are not currently available. This data provides some information for use in habitat management decision making but better techniques are needed to improve cost-effectiveness. For example, the current plan does not establish procedures for gathering data before and after habitat management projects such as controlled burns; this restricts the Refuge Manager's ability to assess management effectiveness.

Management for threatened species currently focusses on two beach dependent species, the piping plover and loggerhead sea turtle. Bald eagles and peregrine falcons also are observed during migration, but management opportunities for these species are limited. Potential plover nesting habitat is monitored to locate territorial pairs and nests. When found they will be protected. Location of turtle nests is monitored; when found they are protected from predators and human disturbance. There are currently no other opportunities to manage endangered species on Back Bay Refuge. Unexplored opportunities may exist on Plum Tree Island Refuge.

Waterfowl and other migratory bird management is temporarily limited due to major rehabilitation being done to Refuge impoundments. Prescribed burning of wetland vegetation and fields is done to provide food for migrant and wintering geese.

All aspects of public use management were recently reviewed to reflect the Regional Director's May 1988 guidance for public use management. This information is packaged in the Refuge's February 1990 Public Use Plan which emphasizes 1) continued control of public access to, and use of, the Refuge beach and 2) fish and wildlife education for school children including use of the Refuge as an outdoor classroom.

Since land acquisition began within the recently expanded acquisition boundary, the Refuge Manager has had to divert funds and manpower to the management of these lands. Management includes such tasks as boundary posting and informing the public about Service ownership and its implications concerning traditional and future land uses. As additional land is acquired, work on these and related management priorities will intensify.

### B. Management Prospects

Improvement of the collection and management of wildlife and habitat data is among the highest priority actions of this plan. With the hiring of a Refuge biologist and installation of computerized data management equipment, including a GIS, significant improvement is management decision

making will occur. The GIS will be compatible with technology currently in use at the Service's Virginia Field Office - Ecological Services field station. This will facilitate the sharing and effective use of wildlife information by Service personnel and other agencies. Data collection will be expanded to cover the "west side" of Back Bay where the Service is acquiring additional habitat. Effective management planning of new lands cannot occur without access to current wildlife and habitat information.

Two Federally threatened species use the Refuge beach, the piping plover and loggerhead sea turtle. Effective management of these species is complicated by public use on the beach which includes hikers and motor vehicles. Actions are recommended in this plan to learn more about these species and to gain better control of public use so it can be directed away from important areas during critical time periods. Plover nesting is not expected to be successful until these actions are taken.

Completion of the impoundment rehabilitation project will significantly improve the quality of Refuge migratory bird habitat. This will require development of new impoundment management plans and programs.

Increased management effort will be diverted to the west side for posting, public outreach, wildfire prevention planning and habitat management planning. Effective response to these management responsibilities calls for additional Refuge staff.

More effective use of the wildlife potential at Plum Tree Island will be realized through the addition of a staff person to work with that Refuge.

#### **C. Management Deficit**

Increasing responsibilities that are evolving with the acquisition of additional land cannot be managed with current staff. This deficit will not be balanced by simply adding more people. The absence of a computerized fish, wildlife and habitat data management system will prevent the staff from making the best management decisions. Maintenance equipment is also inadequate to maintain both existing Refuge land and facilities plus land in the expansion area. Additional people and technical support for them will create another deficit. i.e. adequate office space with computer and communication systems. At Back Bay Refuge the current, as well as projected, office space and computer systems are in need of expansion and upgrading.

#### **D. Management Strategy**

A Refuge biologist was added to the staff in 1991 and has been provided with computer support. A Geographical Information System is still needed. Formal procedures for collecting and storing wildlife and habitat data will be developed for all habitat within the approved acquisition boundary, i.e. the barrier spit and the west side of Back Bay. The data base will be consistent with data bases managed by other Fish and Wildlife Service offices and programs.

Wildlife management of the barrier spit will be driven by two management concerns. First, continued protection of the wildlife resources that depend on the relatively undisturbed Refuge beach and intertidal habitat. Management will focus on minimizing human disturbance of nesting and migrat-

ing birds and nesting sea turtles. The second management thrust will focus on maximizing wildlife benefits within the rehabilitated wetland impoundments. This will be accomplished by projecting and implementing soil and water management techniques and prescriptions for the impoundments and closely monitoring their effectiveness. Information gained will allow adjustment of water regimes and soil treatments that will generate the highest quality wildlife habitats for migrating and nesting waterfowl, shorebirds and other wetland-dependent species.

The acquisition of an additional 6340 acres of upland and wetland habitat on the west side of Back Bay presents exciting management opportunities for the Service and the migratory bird resource. The land acquisition project is tantamount to establishing a new refuge having a host of opportunities for wildlife management. The immediate challenge is to plan for the best wildlife use of this habitat and to begin responsive management programs. As a "west side" landowner the Refuge is an abutter to land use alteration projects having the potential to ecologically impact the quality and condition of Back Bay. The Refuge has already taken advantage of this opportunity and become an active neighbor concerning development pressures in the Back Bay watershed.

Plum Tree Island Refuge, a satellite to Back Bay, offers additional wildlife potential that the Refuge has not been able to seize upon due to staff constraints. The Refuge Manager intends to station a Refuge Operations Specialist at this Refuge to monitor wildlife and propose management programs. If the recommendations are feasible, and cost effective, funds will be sought to implement responsive management programs at Plum Tree Island Refuge.

Administrative work must be done before opportunities on the barrier spit, the west side and Plum Tree Island can be realized. Office, computer and communication support must be upgraded to fully accommodate the present and anticipated staff. This can be accomplished by establishing new and improved visitor facilities away from the current headquarters building and then enlarging and upgrading the headquarters complex.





## **APPENDIX 1**

### **BACK BAY NATIONAL WILDLIFE REFUGE MANAGEMENT OBJECTIVES**

The following management objectives for Back Bay Refuge respond to the guidance and issues presented in preceding sections of this document. These 3-5 year objectives are key tools that will be used to track the responsiveness of management decisions and actions to identified Refuge concerns. All of these objectives are important, therefore some degree of work will be directed toward each of them. However, funding and staffing levels dictate that all cannot be given high priority management attention. For this reason each objective has a high, medium or low priority to guide the Refuge Manager during allocation of management resources. The objectives are also listed in the Management Strategies section to serve as an outline for organizing strategies.

Objectives are numbered consecutively for tracking purposes and are listed under major program headings. There is some overlap between habitat and wildlife objectives.

#### **Wildlife Management**

1. DEVELOP AND OPERATE AN EFFECTIVE WILDLIFE/HABITAT DATA MANAGEMENT SYSTEM FOR BACK BAY AND PLUM TREE ISLAND REFUGES (HIGH PRIORITY)
2. PROTECT MIGRATION AND NESTING HABITAT FOR PIPING PLOVERS, AND IF NESTING OCCURS, FLEDGE 2.0 CHICKS PER ACTIVE NEST (HIGH PRIORITY)
3. SUCCESSFULLY HATCH 90% OF THE LOGGERHEAD SEA TURTLE EGGS THAT ARE LAID ON, OR TRANSPLANTED TO, THE REFUGE (HIGH PRIORITY)
4. PROVIDE SUFFICIENT HABITAT TO MAINTAIN HEALTHY WINTERING POPULATIONS OF:
  - DABBLING DUCKS (HIGH PRIORITY)
  - CANADA GOOSE (HIGH PRIORITY)
  - SNOW GOOSE (MEDIUM PRIORITY)
5. PROVIDE HABITAT TO ACCOMMODATE MIGRATING AND/OR NESTING MIGRATORY BIRDS:
  - SHORE BIRDS/WADING BIRDS (HIGH PRIORITY)
  - RAPTOR SPECIES (LOW PRIORITY)
  - WOODCOCK (LOW PRIORITY)
  - PASSERINE SPECIES (LOW PRIORITY)
  - MARSH NESTING SPECIES (LOW PRIORITY)

6. PROVIDE HABITAT FOR PLANT AND ANIMAL SPECIES LISTED BY THE STATE OF VIRGINIA AS RARE, THREATENED, OR ENDANGERED (HIGH PRIORITY)
7. MANAGE REFUGE DEER HERD TO MAINTAIN HEALTH OF HERD AND LIMIT OVERBROWSING (HIGH PRIORITY)

#### **Exotic/Feral Species Management**

8. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PROLIFERATION OF PHRAGMITES (HIGH PRIORITY)
9. ELIMINATE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, ENDANGERED SPECIES, AND INDIGENOUS RESIDENT SPECIES CAUSED BY THE PRESENCE OF FERAL HORSES (HIGH PRIORITY)
10. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, ENDANGERED SPECIES, INDIGENOUS RESIDENT SPECIES, AND REFUGE FACILITIES CAUSED BY THE PRESENCE OF FERAL HOGS (MEDIUM PRIORITY)
11. REDUCE THE NEGATIVE IMPACTS TO MIGRATORY BIRDS, INDIGENOUS RESIDENT SPECIES, AND REFUGE FACILITIES CAUSED BY THE PRESENCE OF NUTRIA (MEDIUM PRIORITY)

#### **Public Use Management (ALL MEDIUM PRIORITY EXCEPT FOR #12)**

12. ASSURE THAT PUBLIC USE ACTIVITIES AND FACILITIES ARE COMPATIBLE WITH REFUGE PURPOSES AND CONSISTENT WITH STATION MANAGEMENT OBJECTIVES; DEVELOP AND IMPLEMENT STRATEGIES TO ELIMINATE NON-COMPATIBLE SITUATIONS (HIGH PRIORITY)
13. ASSESS THE NEED FOR AND, WHERE NECESSARY, DEVELOP AND ADHERE TO VISITOR CARRYING CAPACITIES
14. PROVIDE OUTDOOR CLASSROOMS FOR EDUCATIONAL INSTITUTIONS INVOLVED IN ENVIRONMENTAL EDUCATION; EMPHASIZE WILDLIFE AND HABITAT MANAGEMENT
15. CONVEY THE REFUGE "STATION MESSAGE" (8RM 1.4 [R-5:007]) TO VISITORS AND OFF-REFUGE GROUPS AND INDIVIDUALS
16. CONVEY TO ALL VISITORS THAT REFUGES ARE PRIMARILY FOR WILD LIFE AND THAT PUBLIC USE MAY BE RESTRICTED ON SOME PARTS OF THE REFUGE

17. ORIENT, INFORM AND GUIDE REFUGE VISITORS WITH HIGH QUALITY SIGNS AND LITERATURE THAT CONVEY CURRENT INFORMATION ON HOURS OF OPERATION, REGULATIONS, PROGRAMS, FACILITIES AND ACTIVITIES
18. PROVIDE VISITOR SITES AND FACILITIES THAT ARE NECESSARY, EFFICIENT, SAFE, WELCOMING AND VISUALLY ATTRACTIVE
19. INFORM LOCAL RESIDENTS AND GROUPS ABOUT REFUGE MANAGEMENT ISSUES THAT AFFECT THEM
20. GENERATE AND MAINTAIN A NETWORK OF COMMUNITY MEMBERS WHO ACTIVELY SUPPORT REFUGE MANAGEMENT ACTIONS

#### **Habitat Acquisition, Protection, Management**

21. CONTINUE TO ACQUIRE HABITAT WITHIN THE REFUGE ACQUISITION BOUNDARY (HIGH PRIORITY)
22. INFLUENCE OFF-REFUGE LAND USE DECISION MAKING IN WAYS THAT RESTORE, MAINTAIN OR ENHANCE BACK BAY/NORTH LANDING RIVER WATER QUALITY (MEDIUM PRIORITY)
23. DEVELOP A MANAGEMENT OVERVIEW TO GUIDE INITIAL MANAGEMENT OF LAND THAT HAS BEEN, AND WILL CONTINUE TO BE, ACQUIRED ON THE "WEST SIDE" OF THE REFUGE (HIGH PRIORITY)

#### **Fire Management**

24. COMPLY WITH REGIONAL FIRE MANAGEMENT COORDINATOR'S GUIDANCE (HIGH PRIORITY)

#### **Cultural Resource Management**

25. COMPLY WITH HISTORIC/ARCHAEOLOGICAL RESOURCE PROTECTION LAWS AND REGULATIONS (MEDIUM PRIORITY)

#### **Plum Tree Island Refuge Management**

26. DETERMINE THE FUTURE MANAGEMENT DIRECTION OF PLUM TREE ISLAND REFUGE (HIGH PRIORITY)

## **Administration**

27. ENSURE THE HEALTH AND SAFETY OF ALL REFUGE USERS, INCLUDING STAFF (HIGH PRIORITY)
28. DEVELOP THE OPERATIONS CAPABILITY TO ACCOMPLISH THE OBJECTIVES OF THIS PLAN, SPECIFICALLY ADDRESSING THE FOLLOWING TOPICS (ALL HIGH PRIORITY):
  - HEADQUARTERS/VISITOR CENTER
  - UPGRADE OF OFFICE FUNCTIONS AND HEADQUARTERS EFFICIENCY
  - INCREASE IN REFUGE STAFFING
  - UPGRADE OF MAINTENANCE MANAGEMENT CAPABILITY
  - COORDINATION/COOPERATION WITH OTHER AGENCIES AND ORGANIZATIONS
  - MOTOR VEHICLE ACCESS PERMIT PROGRAM

## **APPENDIX 2**

### **PUBLIC USE STRATEGIES FROM 1990 PUBLIC USE MANAGEMENT PLAN**

#### **A. Strategies Recommended for Use in Public Relations**

- a) Prepare news releases and public service announcements in accordance with the following outline:
  - (1) Upcoming Events (tours, talks, demonstrations)-individually for each event or combined in a monthly or quarterly format.
  - (2) Seasonal Happenings - as they relate to visitor observation opportunities - at least two times per year.
  - (3) Habitat Management Activities - at least two times per year.
  - (4) Announcements (special closures, volunteer recruitment, preparation of EA's, public meetings, etc.) - as needed.
- b) Coordinate with the State and surrounding cities to ensure that appropriate directional signs are erected to efficiently assist visitors in reaching the Refuge.
- c) Delegate responsibilities (such as scheduling, recruitment, recognition, etc.) associated with administering the Refuge volunteer program to a permanent GS-5/7 Outdoor Recreation or a dedicated volunteer/volunteer coordinator.
- d) Organize a renewed effort to obtain media backing for publicizing Refuge events and activities. In conjunction with this effort, develop a press package including a Refuge fact sheet, photos, leaflets, and brochures which can be made available to the media at any time.
- e) Submit requests for professionally produced exhibits for the VCS and Refuge kiosk.
- f) Present on-site and off-site programs for special interest groups. Recommended frequency: "On-site", as requested. "Off-site", if staffing permits, no more than three per month.
- g) Prepare and submit the necessary drawings/materials to Technical Services for a professionally produced Refuge guide map, shorebird protection flyer, and Plum Tree Island NWR handout.
- h) Provide for a dispensing area in the VCS to provide the public with regional leaflets and other publications.
- i) Establish a cooperating association by Fiscal Year 1991.
- j) Submit requests for the purchase of at least two new films or videos each Fiscal Year.



- k) Evaluate Refuge informational materials to ensure that certain handouts, displays, and signs include a discussion of the Service/State/Municipal land arrangement. Ensure that the Refuge is clearly identified to further eliminate public confusion as it relates to the Little Island City Park/ Back Bay NWR/False Cape State Park Area.
- l) Locate a sponsor to handle the production of Field Notes.
- m) Revise the Refuge Sign Plan within six months of receiving the approved Service Sign Manual.
- n) Purchase advertising space in local newspapers, as deemed necessary, to supplement news releases and feature stories.
- o) Develop a gifts catalog for the Refuge by FY91.
- p) Work with local radio stations to produce at least two Refuge-related PSA's or to increase the number of interviews conducted each year. Announcements/ interviews should focus on wildlife and Refuge happenings.
- q) Contact at least three magazines, area reporters, and/or freelance writers each year in an effort to increase the number of feature stories prepared on the Refuge.

#### **B. Strategies Recommended for Entrance Fee Program**

- a) Improve the appearance of the informational kiosk on the beach and design and obtain any additional signs that may be needed to direct visitors to the fee collection point.
- b) Purchase storm shutters for the windows of the fee booth to increase security and to prevent vandalism.
- c) Hire Gate Attendant(s) to staff fee booth and to perform fee related responsibilities. Staffing not to exceed .5 FTE/year (1-3 temporary attendants).
- d) Consult with Regional Engineers and/or others to develop plans for redesigning main entrance area to enhance traffic flow. Implement Plan.
- e) Increase public understanding of the entrance fee program by providing additional information on the benefits of fee programs. This should be accomplished through the use of an informational flyer or leaflet or through the development of an interpretive panel aimed at explaining the purpose for, and benefits of, fee programs. Interpretive information should be tied into a turn-off and self-service kiosk at the north end of the Refuge.
- f) Consult with Regional Landscape Architect or others to develop a landscape plan for the main entrance to the Refuge. Implement Plan.
- g) Provide for a bike exit which bypasses the automatic gate at the north end of the RefugeC. C.

### **C. Strategies for Volunteer Program**

- a) Meet with Refuge staff each quarter to obtain a list of jobs where volunteer assistance might be utilized. Identify appropriate volunteers for these tasks and attempt to schedule volunteer help.
- b) Develop a high quality, professional looking Refuge volunteer handbook and orientation packet.
- c) Investigate the possibility of utilizing an appropriate volunteer to coordinate certain aspects of the Refuge volunteer program.
- d) Reorganize the volunteer files and incorporate them into the Refuge's main filing system.
- e) Examine alternate methods for obtaining monthly volunteer availability information.
- f) Create position descriptions for the primary volunteer duties. Investigate areas where volunteer assistance could be utilized and develop appropriate position descriptions for these jobs as well. Advertise.

### **D. Strategies Recommended for Use in Outdoor Classrooms**

- a) Actively initiate an outreach program designed to increase use of the Refuge by school systems other than Virginia Beach and by a more diverse group of grade levels.
- b) Obtain or develop an outdoor classroom program for teachers which emphasizes particular topics or activities for each grade level.
- c) Coordinate with neighboring agencies, organizations, facilities, and institutions to offer cooperative workshops for teachers.
- d) Complete phase 3 of the outdoor classroom site construction project.
- e) Develop a traveling teaching collection of study skins, skulls, shells, etc. for classroom use.
- f) Increase self-guiding methods of learning about the Refuge through interpretive signs and leaflets which can be utilized by teachers/students.
- g) Train volunteers to professionally handle outdoor classroom contacts and orientations.
- h) Create a facility such as a screened-in pavilion or classroom added as a wing to the existing VCS/ Headquarters, in order to provide an appropriate work space for outdoor classroom group use.
- i) Focus Refuge staff contacts and lesson plans on topics in the Station Message.
- j) Replace the portable boardwalk at the entrance to the Environmental Study Area with a well prepared trail service, topped with stone dust.

- k) Add a return loop to the Outdoor Classroom Site boardwalk which will return students to the west side of the Pond. A loop should also be added which will tie the boardwalk into the Bay Trail.

**E. Strategies Recommended for Use in Conducted Interpretation**

- a) Ensure that interpretive programs focus on and support the Station Message.
- b) Using approved management techniques, increase the value of E-Pool, the triangle, and the north mile of the Refuge in order to attract waterfowl for visitor observation and interpretation.
- c) Work with local newspapers to increase publicity of Refuge programs and develop flyers and announcements which can be posted locally.
- d) Recruit and train volunteers to conduct quality interpretive programs.
- e) Increase the use of volunteer, roving interpreters during periods of high visitor use.
- f) Investigate the popularity of impromptu walks, occasionally offered on Saturday and Sunday afternoons.

**F. Strategies Recommended for Use in Self-guided Interpretation**

- a) Design a plan for traffic flow which will lead visitors from their vehicles in the parking area to: (1) the VCS and rest rooms; (2) the Seaside Trail; (3) the Environmental Study Area; (4) the Bay Trail; and; (5) the Dike System and Dune Trail.
- b) Consult with several exhibit companies to design and produce interpretive trail head signs for: (1) the Seaside Trail; (2) the Dune Trail; (3) the Bay Trail; (4) the Dike System; and (5) the Environmental Study Area.
- c) Produce an interpretive trail guide for: (1) the Seaside/Beach/Dune Trail loop; (2) the Dike System; and; (3) the Bay Trail.
- d) Consult with several exhibit companies to design and produce an improved self-service area for visitor information where the existing Headquarter's kiosk is now located. All work should be high quality and professional in appearance.
- e) Develop a schedule to ensure that public use facilities, including trails, are inspected for signs of vandalism, littering, safety hazards, maintenance problems, etc. on a regular basis.
- f) Prevent conflicts with other uses and maintain visitor carrying capacities that minimize impacts on wildlife, other visitors, and cultural resources. This may mean that seasonal closures of particular Refuge areas will be necessary.
- g) Schedule and carry out major rehabilitation of the Dune Trail.

- h) Improve self-guided interpretive opportunities along the North mile and on Refuge dikes by creating wildlife observation overlooks/towers. A pull-off and kiosk, complete with general and interpretive information, needs to be constructed at the North entrance.
- i) Determine the compatibility and need for an overflow parking lot adjacent to the existing parking area.
- j) Implement the proposal to use AM radio to transmit visitor information and interpretive messages to travelers, as they reach Sandbridge.
- k) Implement the proposal to replace the existing Seaside Trail with an elevated boardwalk.
- l) Develop a return loop for the Bay Trail.

#### **G. Strategies Recommended for Use in the Visitor Contact Station**

- a) Examine ways to increase use of the Visitor Contact Station.
- b) Appropriately orient and install signs to inform and direct visitors to the VCS.
- c) Examine the possibility of increasing self-service opportunities at the Refuge so that a reduction in the operating hours of the VCS might be considered for certain periods of the year.
- d) Attempt to hire seasonal employees to handle the VCS operations during high Refuge use periods.
- e) Consult with several exhibit companies to design and produce professional exhibit panels for the VCS.
- f) Investigate the possibility of creating a cooperating association to better serve the public and to provide benefits to the Refuge. (See section II-F).
- g) Investigate the possibility of maintaining the decoy exhibit as a six month, seasonal display in order to provide exhibit space which will appeal to a wider audience.

#### **H. Recommended Strategies for Wildlife/wildlands Observation**

- a) Evaluate dike use and wildlife impacts and determine whether seasonal closures are needed to minimize disturbance.
- b) Improve wildlife viewing opportunities along the north mile and dikes by creating openings, vistas, and observation platforms/towers at appropriate locations. "Live" parking within the north mile should also be considered.
- c) Through habitat management, increase wildlife viewing opportunities in the northern portions of the Refuge, particularly in fields and pools adjacent to the VCS.

- d) Install benches and provide interpretive information throughout the Refuge to better accommodate visitors and to increase their understanding of the Refuge.
- e) Improve wildlife viewing opportunities by clearing openings along the Bay Trail.
- f) Install deck mounted binoculars on the VCS deck.
- g) Determine the compatibility and need for an overflow parking lot adjacent to the existing parking lot.
- h) Plan to replace the existing Seaside Trail with a more permanent structure which will provide easy access to the beach from the VCS/Headquarters area.
- i) Add a return loop to the existing Bay Trail.

#### **I. Strategies Recommended for Photography**

- a) Remove the existing photography blinds.
- b) Improve photographic opportunities in conjunction with actions taken to improve wildlife/wildlands observation opportunities. This includes creating openings for wildlife observation; habitat management to increase wildlife activity in areas where high levels of public use takes place; creating vistas, platforms, and/or towers; installing benches and providing interpretive information for the visitor; and improving facilities such as the Seaside Trail.
- c) Assist visitors in photographing wildlife/wildlands by directing them to specific areas having unique photographic opportunities. This can be accomplished at the VCS, at the fee booth, through informational handouts, or during direct contacts with Refuge employees.

#### **J. Strategies Recommended for Use in Walking/Hiking**

- a) Work with Technical Services (RO) to design a one page, easy-to-read map, which includes all dikes, including cross dikes, trails, boardwalks, and distances between major points.
- b) Examine the bike/hike trail which originates at Little Island City Park and terminates at False Cape State Park in order to ensure that the Refuge's identity is not compromised. This should include a survey of signs and interpretive panels located along the trail to ensure that they are in accordance with the Service Sign Manual and are consistent with other signs and panels found on the Refuge. All printed materials should also be examined and reviewed to screen out any misleading information that might confuse the public about the role of the Service.
- c) Develop a bike/hike trail separate from the Refuge entrance road in order to separate pedestrians and bicyclists from vehicular traffic. Trail should run from the north entrance to the VCS.



## **K. Strategies Recommended for Use in Hunting (Big Game)**

- a) Develop a hunting leaflet and associated maps which will be available to the public throughout the year.
- b) Improve informational signing at the Refuge's northern entrances to better explain that a hunt is in progress and the Refuge is CLOSED.
- c) Obtain a full complement of professionally produced hunt signs which are in accordance with the Service Sign Manual. Signs should include informational and regulatory signs as well as signs for the individual hunt zones, check station, and parking areas.
- d) Schedule volunteers to be located at the main entrance to the Refuge on Saturday hunt days (when visitation is normally high) to provide uninformed visitors with information regarding the hunt. This person will also help to ensure that visitors do not disregard signs and enter the hunt area.
- e) Increase enforcement activities during the hunt.
- f) Develop an information area where hunters will have access to a large map of the hunt zones, daily details on hunter success, a list of shuttle times to bring hunters back from the field, a message board, etc.
- g) Investigate the possibility of combining the Refuge and State Park hunter application procedure. Conduct one combined computer lottery for both areas.
- h) Expand the hunt to provide opportunities for handicapped hunters.
- i) Consult the Refuge's Archeological Reconnaissance Report to determine if hunting is impacting any cultural resources.
- j) Prepare a post-hunt news release to inform the public about the results of the hunt.
- k) Obtain a small trailer or construct a portable check-in station to be located in the Headquarters area during the hunt. This will enable all hunters to check-in and check-out at the same location. It may also increase productivity during the hunt since staff will be better able to accomplish office work during slow periods of the day, while still being available to run the check station. In addition, the maintenance complex will be free of hunter activities and will permit the Refuge maintenance staff to continue with their normal duties.

## **L. Recommended Strategies for Bicycling**

- a) Work with Technical Services (RO) to design a one page, easy-to-read map, which includes all dikes, including cross dikes, trails, boardwalks, and distances between major points.



- b) Examine the bike/hike trail which originates at Little Island City Park and terminates at False Cape State Park in order to ensure that the Refuge's identity is not compromised. This should include a survey of signs and interpretive panels located along the trail to ensure that they are in accordance with the Service Sign Manual and are consistent with other signs and panels found on the Refuge. All printed materials should also be examined and reviewed to screen out any misleading information that might confuse the public about the role of the Service.
- c) Develop a bike/hike trail separate from the Refuge entrance road in order to separate bicyclists and pedestrians from vehicular traffic. Trail should run from the north boundary to the VCS.

#### **M. Strategies for Fishing/Crabbing**

- a) Improve the signing near the Refuge dock to decrease the amount of trespass that occurs in that area.
- b) Conduct routine law enforcement checks of people fishing/crabbing on the Refuge to ensure that they are licensed and abiding by size restrictions.
- c) Create a walkway or trail along the Bay's edge to provide access for handicapped people wishing to engage in fishing/crabbing.
- d) Investigate the conditions under which the Refuge was opened to fishing.
- e) Prepare a Fishing Plan for the Refuge.
- f) Develop/designate sites for fishing.
- g) Develop a fishing/crabbing handout, which includes a map, to distribute to visitors who are interested in fishing/crabbing on the Refuge.
- h) Incorporate fishing/crabbing activities into Refuge interpretive information.
- i) Continue to enforce the "no sunbathing/no swimming" policy, even where one individual in a party is engaged in surf fishing. Distribute information to the public on Refuge regulations and verbally reinforce the Refuge's policy on non-wildlife oriented activities.

#### **N. Strategies Recommended for Use in Trapping**

- a) Ensure that news releases are issued and printed by area papers and that adequate announcements are posted at the Refuge in an effort to increase interest in the trapping program.
- b) Encourage trappers to inspect traplines during periods of low public use (i.e. early mornings).
- c) Develop a schedule for Staff field inspections of trap lines and trapper activities to ensure that appropriate and safe trapping measures are being used.

- d) Develop an informational hand-out concerning trapping opportunities on the Refuge which can be distributed to visitors throughout the year.
- e) Develop and erect signs at appropriate locations on the Refuge to inform the visiting public that trapping activities are underway. Signs should also contain warnings regarding pets and should stress the need for visitors to stay on designated trails and roadways.
- f) Prepare a post trapping season news release to inform the public about the season harvest.

**O. Strategies Recommended for Cooperating Association**

- a) Create a new association, with its own board of directors, articles of incorporation, and established by-laws.
- b) Recruit association organizers from among known Refuge supporters, civic leaders, and Refuge volunteers.
- c) Work with the association to generate support for the Refuge through its activities and to create funds which will directly support Refuge programs.
- d) Work with the association to take over the quarterly production of Field Notes.
- e) Work with the association to provide funds for support of the Refuge volunteer program.
- f) Within the association's by-laws, provide for the selling of memberships.
- g) Work with the association to develop a gifts catalog for the Refuge.
- h) Determine the viability of establishing a sales outlet in the VCS. If practical, provide display and storage space in the VCS and work closely with the association to establish an inventory of appropriate items.



## **APPENDIX 3**

### **BACK BAY ACCESS REGULATIONS**



# Federal Register

## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 28

#### Public Access, Use and Recreation; Back Bay National Wildlife Refuge, VA

**AGENCY:** Fish and Wildlife Service,  
Interior.

**ACTION:** Final rule.

**SUMMARY:** The Fish and Wildlife Service (Service) is revising special regulations concerning public access, use, and recreation on the Back Bay National Wildlife Refuge (NWR), which were published in the Federal Register on May 28, 1980 (45 FR 35823), January 13, 1983 (48 FR 1501), September 1, 1983 (48 FR 39661), and February 19, 1987 (52 FR 5159). This final rule relaxes certain limitations and clarifies eligibility criteria on vehicular access through the Back Bay NWR by revising 50 CFR 28.34. It also incorporates the provisions of Pub. L. 96-315, approved on July 25, 1980, and Pub. L. 98-148, approved on November 4, 1983. Pub. L. 98-148 amended Pub. L. 96-315 to allow access for "up to 15 additional" permittees who met specific conditions for access. A

notice concerning this revision appeared in the Federal Register (48 FR 46662) on October 14, 1983.

**EFFECTIVE DATE:** September 23, 1987.

**FOR FURTHER INFORMATION CONTACT:** Anthony D. Leger, Refuge Manager, Back Bay NWR, 4005 Sandpiper Road, P.O. Box 6288, Virginia Beach, Virginia 23458; Telephone 804-721-2412.

**SUPPLEMENTARY INFORMATION:** On February 19, 1987, there appeared in the Federal Register (52 FR 5159) a proposed rule on Special Regulations Concerning Public Access, Use and Recreation on the Back Bay NWR. Interested persons were allowed 60 days in which to submit written comments, suggestions, or objections, with respect to the proposed rule. Several written comments were received. After consideration of all comments, suggestions and objections, several suggested changes from the proposed rule were adopted.

#### Background

For many years, Back Bay NWR was open to the public for a number of purposes, and free access to the beach by vehicles was permitted. In 1961, less than 10,000 persons used the refuge for various purposes. During the late 1960's, the development of lands south of the refuge for recreational/residential purposes and the increase in availability and popularity of off-road recreational vehicles, resulted in sharply accelerated use. By 1970, the number of persons using the refuge had increased to 235,000 and in 1971, to 348,000. All but a small fraction of this increase involved off-road vehicular use across the beach portion of the refuge. By 1969, it became evident that total public use had resulted in environmental degradation to the extent that a serious conflict existed with respect to the administration of the entire refuge for its intended purposes. Following careful analysis it was determined that certain controls of vehicular uses of the beach were required to reverse the trend of refuge habitat destruction.

On January 12, 1972, the Service provided notice in the Federal Register (37 FR 447) that the Back Bay NWR would be closed to use by unauthorized vehicles. An Environmental Impact Statement (EIS) assessing the impacts of this restriction was prepared (FES 72-33, 1973). A final rule was published on February 28, 1973, that required authorized users to obtain permits for access. Recreational vehicle traffic was prohibited. Permits were issued to property owners in the proposed False Cape State Park area, permanent full-



time residents of the Outer Banks in North Carolina and their visitors, commercial fishermen, emergency service vehicles and schools buses. Implementation of the rule was followed by legal action in a suit against the Service in the District Court for the Eastern District of Virginia (*Coupland, et al. v. Morton, et al.*). A final decision was handed down by Judge John MacKenzie on February 26, 1975 (Civil Action No. 145-73-N), fully upholding the authority of the Secretary of the Interior to control vehicular access across the Back Bay NWR. This order was ultimately upheld by the Fourth Circuit Court of Appeals in a decision issued on July 7, 1975.

The matter of regulating beach use at Back Bay NWR continued to be the subject of considerable discussion by the many persons denied vehicular access to recreational properties in North Carolina. On July 29, 1978, following the preparation of an Environmental Assessment (EA), a liberalized rule (41 FR 31537) was issued which provided limited access eligibility not just to permanent residents of the area as the previous rule had provided, but to all persons who, as of October 6, 1975, owned improved property on the Outer Banks of Currituck County, North Carolina, from the Virginia State line south to and including the village of Corolla, North Carolina.

In order to mitigate the impact on the beach by these additional permittees, it was necessary to place more restrictions on, and limit the number of round trips per day for, permanent full-time residents living between the south boundary of the refuge and the village of Corolla, North Carolina. Based on the restricted access imposed on the permanent full-time residents by the 1978 regulations (41 FR 22361) and the permit program management experience gained from the 1976 and 1977 (42 FR 23151) regulations, the 1978 rule (43 FR 28314) continued to provide access to qualified permanent full-time and part-time residents. These special regulations also provided notice that the refuge beach would be closed to vehicular traffic after December 31, 1979. Subsequently, in an effort to avoid undue hardship on permanent residents who had established residency prior to December 31, 1978, an interim rule was published on December 13, 1979 (44 FR 72161), which provided for access for those permanent residents only. Public comments on this interim rule were invited. All comments submitted by January 31, 1980, were given consideration.

The final rule on Back Bay NWR access, as published on May 28, 1980 (45 FR 35823), provided access for those permanent full-time residents who could provide adequate proof of continuous residency commencing prior to December 31, 1978, on the Outer Banks from the refuge boundary south to and including the village of Corolla, North Carolina. The south boundary of the area for access was defined as, "A straight east-west line extending from Currituck Sound to the Atlantic Ocean and passing through a point 1,600 feet due south of the Currituck Lighthouse." The May 28, 1980, rule also denied a petition for rulemaking received from the Outer Banks Civic League and Pacific Legal Foundation to allow access through Back Bay NWR for part-time residents of the Outer Banks and False Cape State Park.

On July 25, 1980, President Carter signed Pub. L. 96-315 which provided that any time regulations limiting access to the refuge are issued, the Secretary of the Interior shall issue to any "eligible applicant" a permit to enable the applicant to commute across the refuge. The term "eligible applicant" was defined to include: "All full-time residents who can furnish adequate proof of residency commencing prior to December 31, 1979, on the Outer Banks from the refuge boundary south to and including the village of Corolla, North Carolina, as long as they remain full-time residents." The south boundary was defined as a "straight east-west line extending from Currituck Sound to the Atlantic Ocean and passing through a point 1,600 feet due south of the Currituck Lighthouse." On August 7, 1980 (45 FR 52391), the Back Bay access regulations were modified to reflect the legislation.

On September 18, 1981, the Assistant Secretary for Fish and Wildlife and Parks published in the *Federal Register* (46 FR 46358) a Notice of a Petition for Rulemaking submitted by the Virginia Wildlife Federation and the Pacific Legal Foundation seeking the extension of access privileges through the refuge to part-time residents of the Outer Banks. On January 13, 1983, the Service published in the *Federal Register* (48 FR 1501), an extension of the May 28, 1980, regulations (including the August 7, 1980, modification) governing access. The extension was necessary, until revised rules could be issued, so that orderly management of the Back Bay NWR would not be compromised.

On September 1, 1983, the Assistant Secretary published in the *Federal Register* (48 FR 39681), a proposed rule and denial of petition. The proposed rule

included the same changes contained in the *Federal Register* notice of October 14, 1983, outlined below, with the exception of the provision dealing with access essential to maintaining a livelihood. As a result of the passage of Pub. L. 98-107 and the associated *Federal Register* notice (48 FR 46862), finalization of this proposed rule was unnecessary. On November 4, 1983, Pub. L. 98-107 was replaced by Pub. L. 98-146. The provisions of both laws as they relate to access through the Back Bay NWR are identical.

On October 14, 1983, the acting Director published in the *Federal Register* (48 FR 46862) a Notice of Rulemaking. This notice incorporated the provisions of Pub. L. 98-107 into the Back Bay NWR access regulations. Pub. L. 98-107, an amendment to Pub. L. 96-315, stipulates that additional access permits may be issued as follows: "Up to 15 additional permits shall be granted to those persons meeting any one of the following conditions:" (1) A resident as of July 1, 1982, who held a valid Service access permit for improved property owners at any time during the period from July 29, 1976, through December 31, 1979. (2) Anyone in continuous residency since 1976 residing in the area bounded on the north by the refuge boundary and on the south by a straight line passing through a point on the east-west prolongation of the centerline of Albacore Street, Whaleshead Club Subdivision, Currituck County, North Carolina. (3) Any permanent, full-time resident as of April 1, 1983, not otherwise eligible who can substantiate to the Secretary of the Interior that access is essential to their maintaining a livelihood."

In December 1988, the U.S. General Accounting Office (GAO) issued a final report making several recommendations to the Service concerning vehicular access permits. This final rule implements the recommendations contained in the final report. This rulemaking incorporates several minor changes to the existing regulations which further clarify eligibility, provide for the needed regulation of access permits and relax certain limitations on access. This final rule supplements the general regulations that govern access and recreation on wildlife refuges as set forth in Title 50 of the Code of Federal Regulations. The Back Bay NWR, comprising approximately 4,800 acres, is delineated on a map available from the refuge manager or the Regional Director. The policy of the Department of the Interior, whenever practical, is to afford the public an opportunity to participate in the rulemaking process. Public



time residents of the Outer Banks in North Carolina and their visitors, commercial fishermen, emergency service vehicles and schools buses. Implementation of the rule was followed by legal action in a suit against the Service in the District Court for the Eastern District of Virginia (*Coupland, et al. v. Morton, et al.*). A final decision was handed down by Judge John MacKenzie on February 28, 1975 (Civil Action No. 145-73-N), fully upholding the authority of the Secretary of the Interior to control vehicular access across the Back Bay NWR. This order was ultimately upheld by the Fourth Circuit Court of Appeals in a decision issued on July 7, 1975.

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On September 18, 1981, the Assistant Secretary for Fish and Wildlife and Parks published in the *Federal Register* (46 FR 48358) a Notice of a Petition for Rulemaking submitted by the Virginia Wildlife Federation and the Pacific Legal Foundation seeking the extension of access privileges through the refuge to part-time residents of the Outer Banks. On January 13, 1983, the Service published in the *Federal Register* (48 FR 1501), an extension of the May 28, 1980, regulations (including the August 7, 1980, modification) governing access. The extension was necessary, until revised rules could be issued, so that orderly management of the Back Bay NWR would not be compromised.

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comments on the proposed rulemaking were invited. All comments submitted by April 20, 1987, were given consideration.

#### Analysis and Discussion of Public Comments

In summary, of the 44 comments received, 6 supported the adoption of the proposed regulations or more liberal regulations, and 38 opposed the proposed regulations or favored making them more restrictive. Comments on the proposed rule were significant and indicated that further revisions of the proposed rule were necessary.

**Issue:** Additional vehicular traffic contradicts the original intent of the permit access system.

**Response:** Thirteen respondents opposed the regulations because they felt that the rule provided for additional permits or a significant increase in beach travel. The 15 additional permits referred to in the rule relate to the number authorized by Pub. L. 98-146 which was passed in 1983. With the exception of medical access waivers, no additional permits beyond this congressionally-mandated number are authorized for issuance. Additional trips will be made under the provisions relating to commercial service vehicles. These trips will be minimized, however, due to the emergency-only nature of the trips. The original intent of the access permit system was to provide access only to qualified individuals (later defined as permanent residents) who met specific criteria. This is still the intent of the Service. The additional traffic allowed under this final rule is expected to be extremely minimal. The restrictions retained in the rule ensure that access will remain compatible with the purposes for which the refuge was established.

**Issue:** Fragile ecosystems and wildlife should not be compromised for the convenience of individuals who moved to North Carolina knowing that they did not qualify for access.

**Response:** Thirteen respondents made this point. The Service agrees that individuals who moved to the Outer Banks after well-defined and widely publicized cut-off dates should not be provided access. With the exception of medical access waiver permits, additional permits will not be issued to residents of the Outer Banks who established permanent residency after the congressionally mandated cut-off dates.

**Issue:** The Service should implement the December 1986 GAO report which recommends that permit holders who are granted vehicular access be required

to provide sufficient evidence of eligibility or have their permits revoked.

**Response:** Three respondents expressed this viewpoint. The timing of the GAO report and the subsequent publication of proposed regulations was such that the two formerly independent actions have now been combined. The publication of this final rule is the first step towards conducting a more effective and efficient access permit program. Shortly after the finalization date of this rule, the Service, through the refuge manager, Back Bay NWR, will implement the recommendations of the GAO report. At that time the Service will require those permittees who lack adequate documentation of their access eligibility to provide this information and will ensure that permits are issued only to those who legally qualify for them.

**Issue:** There should be year-round, 24-hour access through the refuge for permittees.

**Response:** Three respondents expressed this opinion, while four stated the opposite viewpoint (opposed even a seasonal relaxation of the midnight cut-off time). Since the early 1970's the hours of access have been relaxed several times. In practice, the refuge manager regularly makes exceptions to the 12 midnight cut-off for permittees who work late, attend meetings, etc. A limited amount of travel occurs after midnight and a significant increase is not expected as a result of this change.

The revised rule would relieve the access permittees of the burden of receiving advance approval from the refuge manager for those occasional situations when late night travel is required. No additional trips through the refuge would occur as a result of this rule change. Nesting sea turtles and other wildlife would continue to be protected during the critical summer periods when the restriction on travel from midnight to 5 a.m. would be in effect. Furthermore, one respondent felt that the regulation would be unenforceable without increased regulatory expense and that the increased cost would be diverted from wildlife-related projects. In early 1987, the refuge staffing pattern was reorganized to place appropriate emphasis on wildlife, interpretation, education and law enforcement activities. Within this current staffing arrangement, adequate patrols will be made to guarantee compliance with all refuge special regulations. In addition, the installation of the computer-operated gate in 1985 provides the refuge with data on beach access 24 hours per day. Finally, special "Resource Problem" funding is received

at the refuge level to properly administer the motor vehicle access program without detriment to wildlife related projects.

**Issue:** The medical access waiver provision is too vague. The Service should provide clear guidelines regarding the necessary documentation required to establish eligibility. Second or third medical opinions should be required. Part-time residents should not qualify for medical access over permanent residents who missed the cut-off dates. Emergency medical access is already allowed, thus there is no necessity to grant additional access permits for medical convenience.

**Response:** The Service began issuing "medical access waivers" in the early 1980's out of a desire to administer the access program in a humanitarian manner. The primary criterion for a medical access waiver was: "that life-threatening situations may result from more arduous travel conditions." To date six such permits have been issued. Of these six, five are not residents of North Carolina. The Service agrees that providing access to other than permanent residents is not in keeping with the stated intent of the access program. Furthermore despite Service efforts to be sensitive to the needs of individuals whose health has deteriorated, the medical access waiver provision gives the appearance that the Service is providing access to non-residents to the exclusion of residents of North Carolina. This very fact was pointed out by two permanent residents in their written comments on the proposed rule. It was also an area of significant concern in the GAO report. With the explosion in the number of vacation and retirement homes on the North Carolina Outer Banks since the 1970's, and the aging of the population as a whole, the Service agrees that this special access privilege has the potential to become a major program in itself.

In recent years the Service has taken a very liberal approach regarding access for medical purposes for permittees and non-permittees alike. The Service would not deny access off the Outer Banks to any resident of North Carolina who requires emergency medical attention in the Norfolk, Virginia, area. In addition, the Sandbridge, Virginia, rescue squad and the Corova and Corolla, North Carolina, rescue squads have been issued gate cards so that they have unimpeded use of the beach in an emergency. The refuge monitors the radio communications of these rescue squads and strives to assist with access where possible. The Service believes that it is preferable to have trained



emergency medical personnel transport persons involved in a medical emergency off the beach, rather than to have such transport accomplished by individuals without the training or experience to do so.

Therefore, the Service has amended the rulemaking to show that no additional medical access waiver permits will be issued after December 31, 1987. Those who currently hold these permits will continue to be granted access. However, additional medical access waiver permits will be issued only to permanent full-time residents of North Carolina. Medical access waiver permits will be subject to review prior to the issuance or reissuance of an access permit and at three (3) year intervals thereafter. A provision for a second medical opinion has been added to the regulations. This second opinion will be provided for at Service expense by a government designated physician.

**Issue:** Commercial business employees should provide documentation verifying their employment.

**Response:** This concern was also raised in the GAO report. The present system allows the employer to notify the refuge manager anytime a change occurs in his employee. In addition to written notification, a 4 form is sometimes submitted. For commercial fishing crew members who work on a "share of the catch" basis, a statement indicating their "share" of the catch is considered sufficient proof of employment. The Service has been criticized for failing to require substantiating documentation for these employees. The final rule has been modified to address this area of concern. All commercial permit holders will be required to present adequate employment documentation (i.e., signed W-4 forms, W-2 forms, 1099 forms, earnings statements or paycheck stubs, employee income tax withholding submissions to State and Federal tax offices (IRS form W-3 with W-2s attached)), or other acceptable proof of actual employment for all designated employees. No determination of employment legitimacy and therefore access eligibility is possible without this documentation.

It must be recognized that this is an extremely difficult area for the Service since some individuals are very reluctant to divulge employment information; however, it is impossible to verify employment status without it. In those cases where documentation is not presented, employee access will not be granted.

**Issue:** Permittees should be able to transport in their vehicles whomever they want.

**Response:** It has always been the intent of the Service to minimize, to the greatest extent possible, the inconvenience to bona fide permittees who utilize the refuge beach as an access route. Passengers in permittee operated vehicles are adequately covered under section (a)(5) of the final rule. The Service, through rulemakings dating back to 1972, has notified the public of its intent to provide access only to those who meet specific criteria. Access is provided to minimize the inconvenience (to certain qualified individuals) of the Service's decision to limit beach travel for the protection of the resource. Access is not granted to permittees for the purpose of transporting those who do not meet the well-defined criteria. Section (a)(5) clarifies the regulations so that there is no misunderstanding of the Service position in this matter.

**Issue:** The Service's restriction on dike road traffic is inconsistent with policies at other refuges where dike traffic is allowed.

**Response:** The decision on whether to allow vehicles on Service roadways and dikes is made on a refuge by refuge basis. These decisions are based on a number of criteria including: Condition of the dike (road) surface and substrate, amounts of expected traffic, degree of disturbance to wildlife, wilderness designation, management capability, etc. At Back Bay, the dike roads were not designed for daily vehicular traffic. Furthermore, environmental reviews have consistently evaluated travel on the refuge beach, which is the historic route of travel. The Service considered allowing access on a road behind the dunes in an EIS issued in 1972, but rejected the use of such a road by automobiles.

**Issue:** Motor vehicle access permittees depend on the Virginia Beach area for services and therefore require more than emergency access for commercial service vehicles.

**Response:** Three respondents supported the contention that "emergency" commercial service access was inadequate to meet the needs of North Carolina residents who have access permits. Four others felt the proposed action was vague, or would lead to a significant increase in travel.

It is the intent of the Service to provide access for essential commercial service vehicles only when no reasonable alternative access exists, or in emergency situations. Section (h)(1) has been revised to clarify this point. Since access across State lands is necessary, the permittee is responsible for securing concurrence from the

Superintendent of False Cape State Park.

In the May 6, 1977, final rule (42 FR 23151) the Service addressed the issue of commercial service vehicle access during hours other than 8 a.m. to 5 p.m. Monday thru Friday. The refuge manager, upon reasonable notification, will be able to authorize trips outside the prescribed time periods for emergency repair situations should they arise.

**Issue:** State park concerns have not been taken into account by the Service in formulating the proposed rule.

**Response:** The Director of the Virginia Department of Conservation and Historic Resources responded on behalf of False Cape State Park (FCSP). The local U.S. Congressman wrote in support of the State's position. In summary, the State was concerned with the following: (1) Additional access permits through the refuge must receive concurrence from FCSP, (2) 24 hour access will greatly increase the workload for FCSP staff, (3) access for commercial vehicles must be approved by the FCSP Superintendent, (4) criteria must be given for medical access waivers, (5) the manager has too much authority under the provisions for suspension or waiver of rules, (6) access to the FCSP for Environmental Education related purposes could be restricted, and (7) FCSP staff need additional trips (beyond two per day).

The Service does not dispute the authority of the State to administer access through the FCSP. In the past, the State has chosen to concur in most access decisions made by the Service. Recently, the State has taken a more active role in administration of its permit system and the management of FCSP. Nothing in this final rulemaking should be construed as binding the FCSP to allow any specific type of access. The State has the authority to permit or deny access through its lands subject to the provisions of State law.

The issues of 24 hour travel, commercial service vehicles, and medical access waivers have been addressed above. It is not appropriate for the Service to address State workforce constraints.

The refuge manager has authority to suspend or waive the access rules under section (k) of this final rulemaking. This authority is similar to that which is exercised by all refuge managers as outlined in various sections of 50 CFR Parts 25, 26, and 27. These provisions are expanded upon here, due to the unique nature of the motor vehicle access situation. In the past, FCSP activities have been covered in a



emergency medical personnel transport persons involved in a medical emergency off the beach, rather than to have such transport accomplished by individuals without the training or experience to do so.

Therefore, the Service has amended the rulemaking to show that no additional medical access waiver permits will be issued after December 31, 1987. Those who currently hold these permits will continue to be granted access. However, additional medical access waiver permits will be issued only to permanent full-time residents of North Carolina. Medical access waiver permits will be subject to review prior to the issuance or reissuance of an access permit and at three (3) year intervals thereafter. A provision for a second medical opinion has been added to the regulations. This second opinion will be provided for at Service expense by a government designated physician.

*Issue:* Commercial business employees should provide documentation verifying their employment.

*Response:* This concern was also raised in the GAO report. The present system allows the employer to notify the refuge manager anytime a change occurs in his employee. In addition to written notification, a W-4 form is sometimes submitted. For commercial fishing crew members who work on a "share of the catch" basis, a statement indicating their "share" of the catch is considered sufficient proof of employment. The Service has been criticized for failing to require substantiating documentation for these employees. The final rule has been modified to address this area of concern. All commercial permit holders will be required to present adequate employment documentation (i.e., signed W-4 forms, W-2 forms, 1099 forms, earnings statements or paycheck stubs, employee income tax withholding submissions to State and Federal tax offices (IRS form W-3 with W-2s attached)), or other acceptable proof of actual employment for all designated employees. No determination of employment legitimacy and therefore access eligibility is possible without this documentation.

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The issues of 24 hour travel, commercial service vehicles, and medical access waivers have been addressed above. It is not appropriate for the Service to address State workforce constraints.

The refuge manager has authority to suspend or waive the access rules under section (k) of this final rulemaking. This authority is similar to that which is exercised by all refuge managers as outlined in various sections of 50 CFR Parts 25, 26, and 27. These provisions are expanded upon here, due to the unique nature of the motor vehicle access situation. In the past, FCSP activities have been covered in a





Special Use Permit which was issued by the refuge manager. Due to an oversight, no permit was issued in 1986. The refuge manager will issue an annual Special Use Permit to the FCSP to clarify access through the refuge to FCSP. On May 28, 1980, the Service issued a final rule governing motor vehicle access across Back Bay NWR. In this rule, access for FCSP employees was addressed for the first time. A statement under section (g) of the rule stated that FCSP employees would be granted access. In the discussion of major comments on this rulemaking, the Service rejected access for visitors of FCSP employees since, "... No other class of permittees is authorized visitor access ...". It was clearly the intent of the Service that these employees were bound by the regulations imposed on all other permittees. In the September 1983 proposed rule, the Service clarified this issue by stating that FCSP employees would be considered as permanent full-time residents with access privileges identical to those of other permittees. This language is retained in this final rule. Despite the State's concerns on this issue, it would be inconsistent for the Service to allow additional trips for State employees due to the nature of their employment, or their status as Virginia residents. To the maximum extent possible the Service strives to treat all permittees equally. To do otherwise would undermine the credibility of the access program.

#### **Differences Between the Proposed Rule and the Final Rule**

As a result of public comments, several changes were incorporated into this final rule. Minor wording changes are incorporated in various sections of the final rule.

**Section (a)**—All eligibility criteria contained in Pub. L. 96-315, enacted in 1980 and Pub. L. 98-146, enacted in 1983 have been cited in this section. In section (a)(5)—the following statement was added "Permits are not transferable by sale or devise."

**Section (f)** on Military, fire, or emergency vehicles was modified by adding the following: "Continuous or recurring use of the beach for other than emergency purposes shall require the issuance of a permit from the refuge manager."

**Section (g)** concerning public utility vehicles was amended to include provisions for the issuance of an access permit.

A minor wording change was made in section (h). Essential commercial service vehicles, to clarify that access for this purpose will only be allowed if no reasonable alternative to the access

exists as determined by the refuge manager.

**Section (j)(1)** was amended to specify that commercial fishing businesses must have "continuously" operated since 1972. In addition, the following statement was added: "Commercial permits are not transferable by sale or devise. The level of commercial permittee travel across the refuge shall not increase above the average yearly levels maintained in the 1985 to 1987 period." **Section (j)(2)** was amended to apply the standards outlined for commercial fishermen to other businesses. Language was added to section (j)(4) specifying the types of "appropriate documentation" for commercial business employees.

In section (k)(4)(i) improved property owners were dropped from eligibility for medical access waivers. New sections (k)(4)(ii) and (iii) were added to provide for periodic reviews of medical access waiver permits and Service designated and funded second medical opinions respectively. Section (k)(4)(iv) was added to include a cut-off date beyond which no medical waiver permits would be issued and (k)(4)(v) was included to grandfather current non-resident medical access permit holders.

**Section (m)(1)** underwent a minor wording change. **Section (m)(2)** was modified to include a prohibition on towing, transporting, or operating vehicles owned by non-permit holders. This change is consistent with the intent of the regulations issued since 1980 which provided access for qualified permanent residents only and supports the language in section (a)(5) of the rule. **Section (m)(5)** was modified to include a prohibition against access "for any other purposes not covered in this rule."

**Section (o)**, Beach-oriented uses, was amended to incorporate a change in refuge management activities which occurred during 1987 under the manager's authority to close any portion of the refuge "to protect the resources of the area." This authority is codified in 50 CFR 25.21, 25.31, and 29.3.

**Section (r)** was modified to specify the months in which pets are permitted. **Section (s)(2)** was added to require a permit for groups exceeding 10 individuals.

Since these regulations relieve restrictions to allow the issuance of medical access waiver permits, the Service has determined under the provisions of 5 U.S.C. 553(d) that good cause exists to make these regulations effective upon publication in the Federal Register.

#### **Conformance With Statutory and Regulatory Authorities**

The National Wildlife Refuge System Administration Act of 1966, as amended, (16 U.S.C. 668dd), authorizes the Secretary of the Interior to permit the use of any area of the Refuge System for any purpose, including access, whenever he determines that such uses are compatible with the major purposes for which the area was established. The Back Bay NWR was established by Executive Order 7907, June 6, 1938, "as a refuge and breeding ground for migratory birds and other wildlife."

The limited use permitted by these regulations is compatible with the major purposes for which the Back Bay NWR was established. This determination is based upon consideration of, among other things, the initial EIS on Motor Vehicle Access (FES 72-33, 1973), the EA completed December 12, 1975, the Service's final EIS on the proposed State-Federal land exchange involving portions of False Cape State Park and Back Bay NWR, and the EA prepared on the proposed rulemaking September 1, 1983.

#### **Paperwork Reduction Act**

Information collection is required for obtaining a vehicular access permit. The information is necessary to determine eligibility of applicants, and failure to respond may result in permit denial. This information collection has been approved by the Office of Management and Budget (OMB) under number 1018-0014. This rule will not modify the information collection requirements authorized by OMB.

#### **Environmental Considerations**

EAs have been prepared on previous rules and are available for public inspection at: Back Bay NWR, 4005 Sandpiper Road, P.O. Box 6286, Virginia Beach, Virginia 23456; and Virginia Beach Public Library, Operations Building, Room 300, Courthouse Complex, Virginia Beach, Virginia 23456.

Copies of EAs can also be obtained by addressing Regional Director, U.S. Fish and Wildlife Service, One Gateway Center, Suite 700, Newton Corner, Massachusetts 02158.

#### **Economic Effects**

This rule involves local, private residents only. Small entities will not be significantly affected. Accordingly, the Department of the Interior has determined that this rule is not a "major rule" within the meaning of Executive Order 12291 (February 19, 1981, 46 FR 13193) and will not have a significant economic effect on a substantial number



of small entities within the meaning of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), nor does this rulemaking require preparation of a regulatory analysis. This conclusion is based on the finding that no substantial costs, if any, should result for any small entity.

#### Drafting Information

The following individuals participated in the writing of these regulations: Anthony Leger, Edward Moses and Patricia Martinkovic.

#### List of Subjects in 50 CFR Part 26

National Wildlife Refuge System. Recreation. Wildlife refuges. Accordingly, Part 26 of Chapter I of Title 50 of the Code of Federal Regulations is amended as set forth below:

#### PART 26—[AMENDED]

1. The authority citation for Part 26 is revised to read as follows:

Authority: 5 U.S.C. 301; 16 U.S.C. 460k, 604, 668dd, 715i; Pub. L. 96-315 (94 Stat. 958) and Pub. L. 96-146 (97 Stat. 355).

2. The special regulations governing public access, use and recreation on Back Bay NWR in § 26.34 are revised to read as follows:

§ 26.34 Special regulations concerning public access, use and recreation for individual national wildlife refuges.

#### Virginia

#### Back Bay National Wildlife Refuge Access

(a) *Access qualifications and specifications.* (1) As provided for in Pub. L. 96-315, permanent, full-time residents who can furnish to the refuge manager, Back Bay NWR, adequate proof of continuous and continuing residency, commencing prior to December 31, 1979, on the Outer Banks from the refuge boundary south to and including the village of Corolla, North Carolina, as long as they remain permanent, full-time residents. The south boundary of the area for access consideration is defined as a straight east-west line extending from Currituck Sound to the Atlantic Ocean and passing through a point 1,600 feet due south of the Currituck lighthouse. "Residence" means a place of general abode; "Place of general abode" means a person's principal, actual dwelling place in fact, without regard to intent. A "dwelling" means a residential structure occupied on a year-round basis by the permit applicant and shall not include seasonal or part-time dwelling units such as beach houses, vacation cabins, or structures which are intermittently occupied.

(2) As provided for in Pub. L. 96-146, "Up to 15 additional permits shall be granted to those persons meeting any one of the following conditions:"

(i) A resident as of July 1, 1982, who held a valid Service access permit for improved property owners at any time during the period from July 29, 1976, through December 31, 1979.

(ii) Anyone in continuous residency since 1978, in the area bounded on the north by the refuge boundary, and on the south by a straight line passing through a point in the east-west prolongation of the centerline of Albacore Street, Whaleshead Club Subdivision, Currituck County, North Carolina.

(iii) Any permanent, full time resident as of April 1, 1983, residing in the area outlined in paragraph (a)(2)(ii) of this section and not otherwise eligible, who can substantiate to the Secretary of the Interior that access is essential to their maintaining a livelihood; so long as they maintain full-time continuous employment in the Norfolk, Virginia, area may qualify for access.

(3) The burden of proving that the prospective permittee meets these criteria shall be on the applicant by presentation of adequate documentation to the refuge manager. Permittees may be required to submit additional documentation of their eligibility to the refuge manager in order to maintain access. Permits will be issued only to those who legally qualify for them.

(4) Only one permit will be issued per family. All permits issued will be terminated in the event that alternate access becomes available during the permit period.

(5) Permits are issued for the purpose of providing ingress and egress across the refuge beach to the permittee's residence. Personal access is limited to permittees, their families, relatives, and guests while being transported in the permittee's vehicle. "Personal access" means private, non-commercial use. Permits are not transferable by sale or devise.

(6) All vehicle occupants must provide positive identification upon the request of any refuge official.

(b) *Routes of travel.* Access to, and travel along, the refuge beach by motorized vehicles may be allowed between the dune crossing at the key card operated gate near the refuge headquarters, and the south boundary of the refuge only after a permit has been issued or authorization provided by the refuge manager. Travel along the refuge beach by motorized vehicle shall be below the high tide line, within the intertidal zone, to the maximum extent practicable. This may require permittees

to adjust their travel times to avoid high tides which would require the use of the emergency storm access/evacuation route over the east dike.

(c) *Number of trips allowed.* Permittees and members of their immediate families residing with them are limited to a total of two round trips per day per household.

(d) *Hours of travel.* Travel along the designated route is permitted 24 hours per day from October 1 through April 30. Travel is restricted to the hours of 5:00 a.m. to 12:00 midnight from May 1 through September 30.

(e) *Medical emergencies.* Private vehicles used in a medical emergency will be granted access. A "medical emergency" means any condition that threatens human life or limb unless medical treatment is immediately obtained.

The vehicle operator is required to provide the refuge manager with a doctor's statement confirming the emergency within 36 hours after the access has occurred.

(f) *Military, fire or emergency vehicles.* Military, fire, emergency or law enforcement vehicles used for emergency purposes may be granted access. Vehicles used by an employee/agent of the Federal, State or local government, in the course of official duty other than for emergency purposes, may be granted access upon advance request to the refuge manager. Continuous or recurring use of the refuge beach for other than emergency purposes shall require the issuance of a permit from the refuge manager.

(g) *Public utility vehicles.* Public utility vehicles used on official business will be granted access. A permit specifying the times and types of access will be issued by the refuge manager. A "public utility vehicle" means any vehicle owned or operated by a public utility company enfranchised to supply Outer Banks residents with electricity or telephone service.

(h) *Essential commercial service vehicles.* (1) Essential commercial service vehicles on business calls during the hours of 8 a.m.-5 p.m. Monday through Friday will be granted access, only upon prior approval of the refuge manager when responding to a request from a permittee. Such requests may be verbal or in writing. Access by essential commercial service vehicles will be granted only after all other reasonable alternatives to access through the refuge have been exhausted as determined by the refuge manager.

(2) "Commercial service vehicle" means any vehicle owned or operated by or on behalf of an individual.



of small entities within the meaning of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), nor does this rulemaking require preparation of a regulatory analysis. This conclusion is based on the finding that no substantial costs, if any, should result for any small entity.

#### Drafting Information

The following individuals participated in the writing of these regulations: Anthony Leger, Edward Moses and Patricia Martinkovic.

#### List of Subjects in 50 CFR Part 28

National Wildlife Refuge System. Recreation. Wildlife refuges. Accordingly, Part 28 of Chapter I of Title 50 of the Code of Federal Regulations is amended as set forth below:

#### PART 28—[AMENDED]

1. The authority citation for Part 28 is revised to read as follows:

Authority: 5 U.S.C. 301; 16 U.S.C. 460k, 604, 668dd, 715i; Pub. L. 96-315 (94 Stat. 958) and Pub. L. 96-146 (97 Stat. 355).

2. The special regulations governing public access, use and recreation on Back Bay NWR in § 28.34 are revised to read as follows:

§ 28.34 Special regulations concerning public access, use and recreation for individual national wildlife refuges.

#### Virginia

##### Back Bay National Wildlife Refuge

#### Access

(a) *Access qualifications and specifications.* (1) As provided for in Pub. L. 96-315, permanent, full-time residents who can furnish to the refuge manager, Back Bay NWR, adequate proof of continuous and continuing residency, commencing prior to December 31, 1979, on the Outer Banks from the refuge boundary south to and including the village of Corolla, North Carolina, as long as they remain permanent, full-time residents. The south boundary of the area for access consideration is defined as a straight east-west line extending from Currituck Sound to the Atlantic Ocean and passing through a point 1,600 feet due south of the Currituck lighthouse. "Residence" means a place of general abode; "Place of general abode" means a person's principal, actual dwelling place in fact, without regard to intent. A "dwelling" means a residential structure occupied on a year-round basis by the permit applicant and shall not include seasonal or part-time dwelling units such as beach houses, vacation cabins, or structures which are intermittently occupied.

(2) As provided for in Pub. L. 96-146, "Up to 15 additional permits shall be granted to those persons meeting any one of the following conditions:"

(i) A resident as of July 1, 1982, who held a valid Service access permit for improved property owners at any time during the period from July 29, 1978, through December 31, 1979.

(ii) Anyone in continuous residency since 1978, in the area bounded on the north by the refuge boundary, and on the south by a straight line passing through a point in the east-west prolongation of the centerline of Albacore Street, Whaleshead Club Subdivision, Currituck County, North Carolina.

(iii) Any permanent, full time resident as of April 1, 1983, residing in the area outlined in paragraph (a)(2)(ii) of this section and not otherwise eligible, who can substantiate to the Secretary of the Interior that access is essential to their maintaining a livelihood; so long as they maintain full-time continuous employment in the Norfolk, Virginia, area may qualify for access.

(3) The burden of proving that the prospective permittee meets these criteria shall be on the applicant by presentation of adequate documentation to the refuge manager. Permittees may be required to submit additional documentation of their eligibility to the refuge manager in order to maintain access. Permits will be issued only to those who legally qualify for them.

(4) Only one permit will be issued per family. All permits issued will be terminated in the event that alternate access becomes available during the permit period.

(5) Permits are issued for the purpose of providing ingress and egress across the refuge beach to the permittee's residence. Personal access is limited to permittees, their families, relatives, and guests while being transported in the permittee's vehicle. "Personal access" means private, non-commercial use. Permits are not transferable by sale or devise.

(6) All vehicle occupants must provide positive identification upon the request of any refuge official.

(b) *Routes of travel.* Access to, and travel along, the refuge beach by motorized vehicles may be allowed between the dune crossing at the key card operated gate near the refuge headquarters, and the south boundary of the refuge only after a permit has been issued or authorization provided by the refuge manager. Travel along the refuge beach by motorized vehicle shall be below the high tide line, within the intertidal zone, to the maximum extent practicable. This may require permittees

to adjust their travel times to avoid high tides which would require the use of the emergency storm access/evacuation route over the east dike.

(c) *Number of trips allowed.* Permittees and members of their immediate families residing with them are limited to a total of two round trips per day per household.

(d) *Hours of travel.* Travel along the designated route is permitted 24 hours per day from October 1 through April 30. Travel is restricted to the hours of 5:00 a.m. to 12:00 midnight from May 1 through September 30.

(e) *Medical emergencies.* Private vehicles used in a medical emergency will be granted access. A "medical emergency" means any condition that threatens human life or limb unless medical treatment is immediately obtained.

The vehicle operator is required to provide the refuge manager with a doctor's statement confirming the emergency within 36 hours after the access has occurred.

(f) *Military, fire or emergency vehicles.* Military, fire, emergency or law enforcement vehicles used for emergency purposes may be granted access. Vehicles used by an employee/agent of the Federal, State or local government, in the course of official duty other than for emergency purposes, may be granted access upon advance request to the refuge manager. Continuous or recurring use of the refuge beach for other than emergency purposes shall require the issuance of a permit from the refuge manager.

(g) *Public utility vehicles.* Public utility vehicles used on official business will be granted access. A permit specifying the times and types of access will be issued by the refuge manager. A "public utility vehicle" means any vehicle owned or operated by a public utility company enfranchised to supply Outer Banks residents with electricity or telephone service.

(h) *Essential commercial service vehicles.* (1) Essential commercial service vehicles on business calls during the hours of 8 a.m.-5 p.m. Monday through Friday will be granted access, only upon prior approval of the refuge manager when responding to a request from a permittee. Such requests may be verbal or in writing. Access by essential commercial service vehicles will be granted only after all other reasonable alternatives to access through the refuge have been exhausted as determined by the refuge manager.

(2) "Commercial service vehicle" means any vehicle owned or operated by or on behalf of an individual.





partnership, or corporation that is properly licensed to engage entirely in the business of furnishing emergency repair services, including but not limited to plumbing, electrical, and repairs to household appliances.

(3) **Emergency situations.** The refuge manager, upon reasonable notification, will be able to authorize essential service/emergency repair access, outside the prescribed time periods, for emergency situations should they arise.

(i) **False Cape State Park employees.** False Cape State Park and Virginia Game Commission employees who are residents in the park will be considered as permanent, full-time residents as defined in § 28.34(a) with access privileges identical to those of other permittees with beach access privileges.

(j) **Commercial fishermen, businesses and their employees.** (1) Commercial fishermen who have verified that their fishing operations on the Outer Banks of Virginia Beach, Virginia, or Currituck County, North Carolina, have been dependent since 1972 on ingress and egress to or across the refuge are granted permits for access. Travel through the refuge by commercial fishermen from Currituck County, North Carolina, will be permitted only when directly associated with commercial fishing operations. Drivers and passengers on trips through the refuge are limited to commercial fishing crew members. A "commercial fisherman" means one who harvests finfish by gill net or haul seine in the Atlantic Ocean, and who has owned and operated a commercial fishing business continuously since 1972. Commercial permits are not transferable by sale or devise. The level of commercial permittee travel across the refuge shall not increase above the average yearly levels maintained in the 1985-1987 period.

(2) Other businesses who have verified that their business operations on the Outer Banks of Currituck County, North Carolina, have been dependent since 1972 on ingress and egress to or across the refuge will be granted permits for access in accordance with the limitations outlined in paragraph (j)(1) of this section.

(3) Each commercial fisherman or other business may be granted a maximum of five designated employees to travel the refuge beach for commercial fishing or other business-related purposes only. Commercial fishing employees may carry only other commercial fishing employees as passengers. Other business employees may carry only other employees of that business. The hauling of trailers associated with the conduct of

commercial fishing or other business activities is authorized.

(4) Employees of commercial fishermen and/or other businesses who apply for access permits shall have the burden of proving, by the presentation of appropriate documentation to the refuge manager, that they are an "employee" for purposes of this section of the regulations. Appropriate documentation is defined as the submission of standardized and verifiable employment forms including: Signed W-2 and W-4 forms, IRS form 1099, official earnings statements for specified periods, employee income tax withholding submissions to State and Federal tax offices (e.g., IRS form W-3 with W-2s attached), State unemployment tax information or other proof of actual employment. Documentation for each employee must be submitted in advance of access being granted, or, for new employees, within 30 days of their starting date. Failure to provide verification of employment for new employees within 30 days will result in termination of access privileges.

(k) **Suspension or waiver of rules.** (1) In an emergency, the refuge manager may suspend any or all of the foregoing restrictions on vehicular travel and announce each suspension by whatever means are available. In the event of adverse weather conditions, the refuge manager may close all or any portion of the refuge to vehicular traffic for such periods as deemed advisable in the interest of public safety.

(2) The refuge manager may make exceptions to access restrictions, if they are compatible with refuge purposes, for qualified permittees who have demonstrated to the refuge manager a need for additional access relating to health or livelihood.

(3) The refuge manager may grant one-time use authorization for vehicular access through the refuge to individuals, not otherwise qualified above, who have demonstrated to the refuge manager that there is no feasible alternative to the access requested. Authorization for access under this provision will not be based on convenience to the applicant.

(4) Medical access waiver permits may be issued under the following conditions:

(i) The Regional Director may grant access to non-eligible permanent residents who can show proof that their physical health is such that life-threatening situations may result from more arduous travel conditions. The submission of substantiating medical records is required to be considered for a medical access waiver.

(ii) All medical access waiver permittees will be required to prove that their medical condition is or continues to be such that a life-threatening situation would result from more arduous travel conditions. Such proof shall be required prior to the issuance of an access permit, and at 3-year intervals thereafter.

(iii) A second medical opinion will be required by the Regional Director prior to the issuance or re-issuance of any such permit. This second opinion will be provided for at Service expense, by a government designated physician.

(iv) No additional medical access waiver permits will be issued after December 31, 1987.

(v) Previous holders of medical access waiver permits will retain access subject to paragraph (k)(4) (ii) and (iii) of this section.

(l) **Violation of rules.** Violators of these special regulations pertaining to Back Bay NWR are subject to legal action as prescribed by 50 CFR 25.43 and Part 28, including suspension or revocation of all permits issued to the violator or responsible permittee. The refuge manager may deny access permits to applicants who, during the 2 years immediately preceding the date of application, have formally been charged and successfully prosecuted for three or more violations of these or other regulations in effect at Back Bay NWR. Individuals whose vehicle access privileges are suspended, revoked, or denied may, within 30 days, file a written appeal of the action to the Assistant Regional Director-Refuges and Wildlife, One Gateway Center, Suite 700, Newton Corner, Massachusetts 02158, in accordance with 50 CFR 25.45(c).

(m) **Other access rules.** (1) No permit will remain in effect beyond December 31 of the year in which it was issued. Permits may be renewed upon the submission of appropriate updated information relating to the permit, and a signed statement that the conditions under which the previous permit was issued have not changed. In the event of any changes of conditions under which the permit is granted, the permittee shall notify the refuge manager in writing within 30 days. Failure to report changes may result in suspension/revocation of the permit.

(2) Vehicles shall be operated on the refuge beach only by the permittee or other authorized drivers. Permit holders shall not tow, transport or operate vehicles owned by non-permit holders through the refuge. Non-commercial permit holders may tow utility and boat trailers when being used for their



personal use only. Any towed vehicle shall have advance approval from the refuge manager prior to being brought through the refuge. This access privilege is not to be used for any commercial purpose.

(3) The refuge manager may prescribe restrictions as to the types of vehicles to be permitted to ensure public safety and adherence to all applicable rules and regulations.

(4) A magnetic card will be issued to each authorized driver only for his or her operation of the computer controlled gate. No more than two cards will be issued per family. Only one vehicle will be permitted to pass for each gate opening. Unauthorized use of the magnetic card may result in suspension of the permit. A fee will be charged to replace lost or misplaced cards. Malfunctioning cards will be replaced at no charge.

(5) Access is granted for the purpose of travel to and from the permittee's residence and/or place of business. Access is not authorized for the purpose of transporting individuals for hire, or for the transport of prospective real estate clients to or from the Outer Banks of North Carolina, or for any other purpose not covered in this rule.

#### General Rules

(n) *Entry on foot, bicycle or motor vehicle.* Entry on foot, bicycle, or by motor vehicle on designated routes is permitted one-half hour before sunrise to one-half hour after sunset for the purposes of nature observation and study, photography, hiking, surf fishing, and bicycling.

(o) *Beach-oriented uses.* Designated areas of the refuge beach are open to wildlife/wildlands-oriented recreation only as outlined in paragraph (n) of this section. Entry to the beach is via designated access points only.

(p) *Parking.* Limited parking at the refuge office/visitor contact station is permitted only in designated spaces. Parking is available on a first-come, first-serve basis for persons engaged in wildlife/wildlands-oriented recreation only as outlined in paragraph (n) of this section.

(q) *Fires.* All fires are prohibited.

(r) *Pets.* Dogs and other pets, on a hand-held leash not exceeding 10 feet in length, are permitted from October 1 through March 31.

(s) *Other general rules.* (1) Pedestrians and vehicular traffic in the sand dunes are prohibited.

(2) Use by all groups exceeding 10 individuals will require a Special Use Permit, issued by the refuge manager.

(3) Registered motor vehicles and motorized bicycles (mopeds) are

permitted on the paved refuge access road and parking lot at refuge headquarters. All other motorized vehicular use is prohibited, except as specifically authorized pursuant to this rule.

(4) The information collection requirement contained in this rule has been approved by the Office of Management and Budget under 44 U.S.C. 3501, *et seq.*, and has been assigned the number 1018-0014. The information being collected is used to determine eligibility for issuing a vehicular access permit and a response is required to obtain a benefit.

Date: August 28, 1987.

Susan Recca,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Parts 604 and 641

(Docket No. 50828-7108)

#### Reef Fish Fishery of the Gulf of Mexico

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Final rule.

**SUMMARY:** NOAA issues this final rule to implement the mandatory reporting requirements prescribed in the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (FMP). The recordkeeping and reporting requirements were initially reserved in the final rule implementing the FMP. This rule provides for the timely collection of catch, effort, and landings data from persons using fish traps, commercial vessel and headboat owners and operators, and seafood dealers and processors.

**EFFECTIVE DATE:** October 23, 1987, except for § 641.5(g). This rule is being issued prior to approval by the Office of Management and Budget of the information collection requirements of § 641.5(g). When OMB approval is received, a notice will be published in the Federal Register making this section effective.

**FOR FURTHER INFORMATION CONTACT:** William R. Turner, 813-893-3722.

**SUPPLEMENTARY INFORMATION:** The FMP was prepared by the Gulf of Mexico Fishery Management Council (Council) under authority of the Magnuson Fishery Conservation and Management Act, as

amended (Magnuson Act), and is implemented by regulations appearing at 50 CFR Part 641. The FMP contained a provision for mandatory reporting of catch and landings information necessary for management of the reef fish fishery. However, because the data collection system had not been developed at that time, § 641.5 was reserved. A proposed rule to implement the mandatory reporting requirements was published in the Federal Register on October 2, 1985 (50 FR 40208).

The proposed statistical reporting system, designed by NMFS and approved by the Council, makes mandatory the voluntary reporting program for commercial fishermen and dealers that has been utilized since 1958 and initiates a new mandatory program for persons using fish traps. All persons fishing reef fish traps will be required to maintain logbooks providing data on catch, effort, fishing depth and location, and other types of gear fished. Selected commercial dealers and processors will continue to report the weight and value of reef fish handled each month. Provisions for collecting information from charter vessel owners and operators remain reserved pending the outcome of a comparative study of the logbook survey and the Marine Recreational Fisheries Statistical Survey (MRFSS). An information collection requirement in § 641.5(g) for the headboat sector of the fishery was revised and resubmitted to the Office of Management and Budget for approval in February 1987. When OMB approval is received, a notice will be published in the Federal Register making this section effective. The resubmission does not alter the data collection elements from those presented in the proposed rule, but merely separates headboats from the charter vessel survey so that approval can be secured for the headboat data collection while the comparative study between charter vessels and the MRFSS continues. Commercial vessels, charter vessels, and headboats will be inventoried by the Center Director or his designee on an annual basis. Background information describing in detail the need for additional data was presented in the proposed rule and is not repeated here.

#### Comments and Responses

The Texas Parks and Wildlife Department (TPWD) provided the only comments received on the proposed rule. They indicated that the requirements (for commercial fishermen, dealers, and processors) are duplicative of State law and will result in an unnecessary burden on dealers.



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The proposed statistical reporting system, designed by NMFS and approved by the Council, makes mandatory the voluntary reporting program for commercial fishermen and dealers that has been utilized since 1958 and initiates a new mandatory program for persons using fish traps. All persons fishing reef fish traps will be required to maintain logbooks providing data on catch, effort, fishing depth and location, and other types of gear fished. Selected commercial dealers and processors will continue to report the weight and value of reef fish handled each month. Provisions for collecting information from charter vessel owners and operators remain reserved pending the outcome of a comparative study of the logbook survey and the Marine Recreational Fisheries Statistical Survey (MRFSS). An information collection requirement in § 641.5(g) for the headboat sector of the fishery was revised and resubmitted to the Office of Management and Budget for approval in February 1987. When OMB approval is received, a notice will be published in the Federal Register making this section effective. The resubmission does not alter the data collection elements from those presented in the proposed rule, but merely separates headboats from the charter vessel survey so that approval can be secured for the headboat data collection while the comparative study between charter vessels and the MRFSS continues. Commercial vessels, charter vessels, and headboats will be inventoried by the Center Director or his designee on an annual basis. Background information describing in detail the need for additional data was presented in the proposed rule and is not repeated here.

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